GUARDING THE GOODS
Companies struggle to protect intellectual property on the Net by regulating usage and invisibly tagging documents. Page 68

EBAY ON THE RISE
EBay CEO Meg Whitman guides the auction site with good instincts and business savvy. Page 48

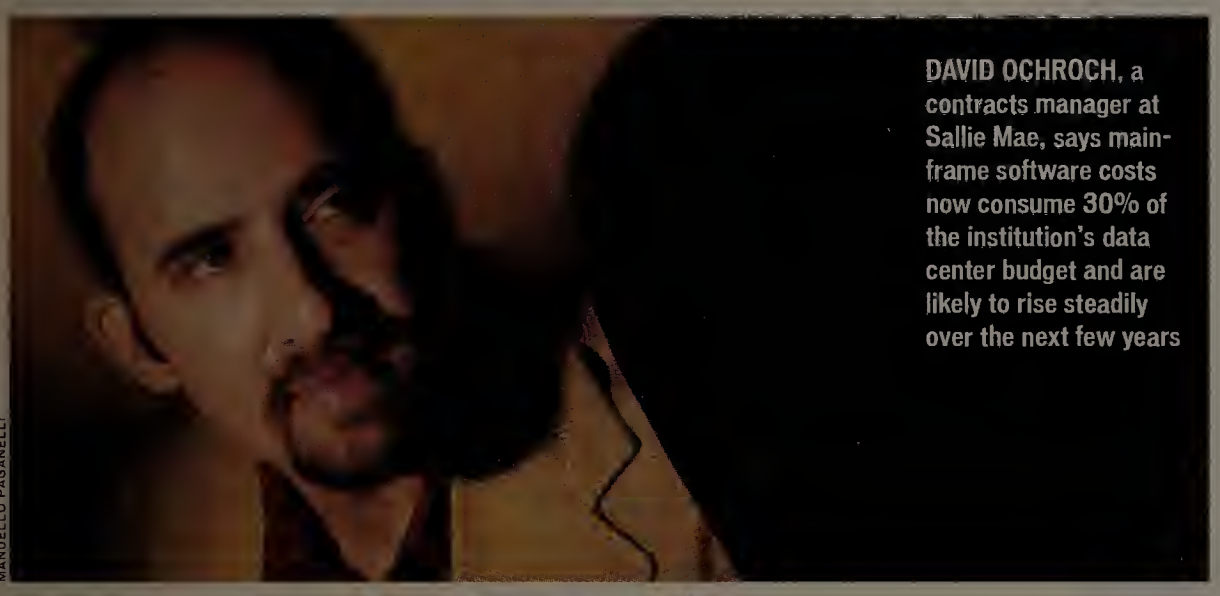
E-PURCHASING
Companies will spend $2.8 trillion on business-to-business e-commerce by 2003, largely through procurement. Page 41

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MANUELLO PAGANELLI

DAVID OCHROCH, a contracts manager at Sallie Mae, says mainframe software costs now consume 30% of the institution's data center budget and are likely to rise steadily over the next few years

OUTRAGED!

MICROSOFT GETS THE ANTITRUST ATTENTION, but corporate technology managers say they're really fed up with price-gouging by mainframe software vendors. Jaikumar Vijayan reports that million-dollar license fees — often to put the same software with the same usage profile on a more powerful machine — have users steamed. It's "nothing more than a shakedown of customers," says one IT manager. But the vendors face limited competition, so they aren't likely to change their highly profitable pricing models any time soon.

SOFTWARE PRICING

Story begins on page 70.

EXECS BACK Y2K SPENDING ALL THE WAY

Top brass, CIOs defend results of biggest IT mobilization ever, reject overspending charges

BY THOMAS HOFFMAN AND JULIA KING

Wall Street spent roughly $5 billion to tame the year 2000 problem, more than the gross domestic product of nations like Burundi. Yet even those who spent next to nothing, like Russia, rang in the new year almost seamlessly.

So: Did U.S. companies overspend?

The answer: A resounding "no," according to a dozen board-level executives and information technology professionals interviewed by *Computerworld* last week.

"I don't think anybody [in corporate America] is embarrassed by the money they spent" on Y2K, said Edward Goldberg, executive vice president at Merrill Lynch & Co. in New York. That's because the top brass who understand the nature of the problem appreciate the potential disasters that were averted, Goldberg and others added. Respondents to a *Computerworld* online poll agreed (see chart, page 16).

But market research firm International Data Corp. in Framingham, Mass., estimates

Y2K Spending, page 16

More Y2K Coverage:

- Expert outlines legal questions facing users and insurers. Page 12
- The Year 2000 Chronicles: An epilogue to our series. Page 14
- Inside a data center and European air-traffic control. Page 18
- A wrap-up of glitches and lessons learned. Page 19

USERS WORRY AS BAAN'S WOES RISE

Another CEO resigns; big Q4 loss expected

BY CRAIG STEDMAN

Several users of Baan Co.'s applications last week said they were growing alarmed after the struggling vendor delivered a surprise triple whammy: the resignation of its CEO, more restructuring moves and the forecast of another big loss.

"I'm shocked," said Mike May, vice president of information technology at Teknion Furniture Systems Ltd. in Toronto, after Baan announced that CEO Mary Coleman had quit after just seven months in that job.

"This takes me from being confident about the future with Baan to being nervous," May said.

Teknion, which makes office furniture, uses Baan's enterprise resource planning software and recently bought new e-commerce and supply-chain planning applications developed by the Netherlands-based vendor.

Coleman is the third CEO to

Baan's Woes, page 81

WIRELESS WEB ACCESS WILL BE VITAL

Device users will drive demand for new sites

BY DOMINIQUE DECKMYN
LAS VEGAS

Consumers are accessing the Web from handheld computers or cellular phones in rapidly increasing numbers, and analysts say companies need to consider whether they want to take their Web sites wireless.

"If companies missed the Internet the first time around, they should be careful not to miss the wireless Web," said Ken Dulaney, an analyst at Gartner Group Inc. in San Jose.

Wireless Web pioneers include news services and travel information sites, but financial services are appearing now, with e-commerce vendors hot on their trail. Online book-

Wireless Web, page 81

Y2K LEGACY MAY LAST FOR YEARS

New approaches to IT, managing will live on

BY PATRICK THIBODEAU

The legacy of the year 2000 problem may reverberate for years in companies and government agencies in the form of new management styles and outlooks. It has raised the visibility of information technology departments, fostered teamwork across large enterprises and made things like disaster planning crucial.

It has also left some IT managers more circumspect about the future. For example, Michael Zupon, IT director at

Y2K Legacy, page 16

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LARRY VOLK

WOULD YOU HIRE THIS MAN?

***Computerworld*'s Steve Ulfelder goes undercover at a job fair to see just how desperate employers are for hot IT skills. He finds they're smarter than he expected.**
Page 56



SPEECH IN CONTEXT

Speech recognition software has come a long way. Gaston Bastiaens, CEO of Lernout & Hauspie Speech Products, shares where he thinks it will go from here. **Page 67**

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8 WAL-MART ENTERS the online travel business but won't offer the discounts customers have come to expect.

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18 GLOBAL MARINE experiences a smooth Y2K rollover.

19 Y2K PROBLEMS prove to be only glitches, causing temporary inconveniences.

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41 BUSINESS-TO-BUSINESS e-commerce will reach $2.8 trillion by 2003, a study by Boston Consulting Group predicts.

44 IDC PREDICTS free Internet access will be commonplace by year's end.

45 E-RETAILERS RUN INTO problems filling orders during the holiday season, but revenues surge 300%.

48 EBAY'S CEO TAKES the company to new Web heights with her business savvy and technical instincts.

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62 EGATE 4.0 OFFERS high-level business logic tools and an open messaging architecture, but not a unique solution.

62 VIGILANCE KEPT hackers away during the Y2K rollover. We should learn from it, says Deborah Radcliff.

QUICKSTUDY

66 APPLICATION programming interfaces provide the rules for how one piece of software talks to another.

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74 INTERNET TECHNOLOGY strategists emerge to take responsibility for end-to-end development of electronic-business applications.

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28 IT DESERVES A PAT ON the back for making it through the year 2000 rollover with barely a scratch. And Global Marine CIO Dick Hudson provides one.

29 FORGET WORKAHOLISM! Michael Cohn says technology has launched other office addictions, like Webaholism.

30 GOVERNMENT NEEDS TO crack down on dot-coms and force them to do pay taxes, argues IT consultant Alex Torralbas.

30 BILL LABERIS offers lessons for IT from his own holiday e-commerce horror show.

47 THE U.S. SPENT MORE than $300 billion on Y2K fixes for a successful rollover, but it may have risked IT's credibility in the process, says Paul A. Strassmann.

59 CONTRACTS CAN TRAP companies if the outcomes of possible future corporate changes aren't included, warns Joe Auer.

82 Y2K ROLLOVER proves a success, and IT staffers shouldn't have to explain why so much money was spent, says Frank Hayes.

"WE'VE GOT THIS FERRARI SCREAMING DOWN THE HIGHWAY AND I'M KIND OF STANDING ON THE HOOD, THROWING ASPHALT DOWN IN FRONT OF IT AS WE GO.

MAYNARD WEBB, PRESIDENT OF EBAY TECHNOLOGIES, ON HOW DIFFICULT IT IS TO SCALE THE SITE'S SYSTEMS TO ACCOMMODATE ITS FANTASTIC GROWTH.
SEE PAGE 48.

AT DEADLINE

White House Seeks Cybersecurity Dollars

The White House on Friday called for more spending on information security research and development as well as scholarship funding for technology training as part of its "national plan" for cybersecurity. Plan supporters are seeking $2.03 billion in computer security money in the 2001 budget, a 17% increase from the $1.75 billion in this year's budget. Federal officials said private-sector cooperation will be key in making the plan work.

Study: Encryption Keys Not Safe

Storing encryption keys on servers isn't as safe as previously believed because of the growth of the public-key infrastructure market, according to London-based nCipher Corp. The security company said finding these keys is easier than had been thought, making "key attacks" possible. No such attacks have been reported yet, the company said.

Short Takes

MICROSOFT CORP. has suspended a program in which it gave $400 rebates to consumers as an incentive to use its Microsoft Network Internet service. Microsoft said it would fine-tune the program to prevent consumers from canceling the service and keeping the money. . . . Herndon, Va.-based NETWORK SOLUTIONS INC., which lists the Web address domain names submitted by domain registrars, said 845 names with trailing hyphens have been improperly listed. The mistake came after five registrars failed to use software that rejects incorrect domain names such as *www.abc-.com*. . . . SAP AG said a 40% increase in software sales would boost its most recent quarterly pretax profit. . . . LUCENT TECHNOLOGIES INC. in Murray Hill, N.J., said Friday it expects revenue for the quarter ended Dec. 31 to be about $9.8 billion, flat with the same period the previous year and below analysts' estimates. . . . As part of a management shake-up, OXFORD HEALTH PLANS INC. in Trumbull, Conn., said Arthur L. Gonzales, 48, will become the insurer's new CIO, replacing Thomas Beauchamp.

Lotus CEO Resigns

Analysts: Executive changes likely to bring groupware maker closer into IBM fold

BY LEE COPELAND

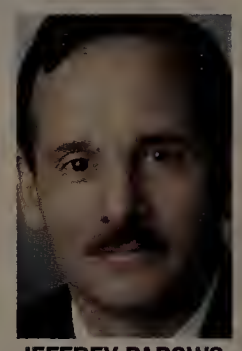
With almost 50 million e-mail messaging seats credited to his tenure at Lotus Development Corp., the company's president and CEO, Jeffrey P. Papows, surprised observers last week and announced his intention to resign effective Feb. 1. Papows remained vague on his postdeparture plans.

He denied that published allegations of impropriety and pending sexual harassment charges factored into his decision.

IBM has named a 23-year IBM veteran, Al Zollar, to the CEO slot at Lotus. For the past 18 months, Zollar, 45, was general manager of IBM's Network Computing Software Division. Zollar plans to move from New York to assume his new role in Cambridge, Mass.

Analyst Tim Sloane at Aberdeen Group Inc. in Boston said Papows' departure will give IBM a chance to bring the Lotus unit in closer to the fold.

"Since its acquisition by IBM, Lotus has been repositioning its products as part of the IBM product line, slowly and gradually," Sloane said. "They are at the point now where their sales and marketing components are tightly coupled with IBM's sales and marketing campaigns." He also said he expects IBM to downplay Lotus' separate brand identity.



JEFFREY PAPOWS, CEO leaving Lotus

IBM didn't comment on the reason for Papows' move. Papows, 45, started at Lotus as a marketing executive in 1992. After IBM bought Lotus in 1995, Papows was promoted to president, and a year later, to CEO. Papows said he has no specific job plans but would like to "own and build" an independent company.

"I was determined not to do what is sometimes done and look for a job while I was in this job. It's not fair to the customers or employees, so I've literally done nothing about that," Papows told *Computerworld*. "But I'm sure I'll end up running a consequential software organization, as I have always done." Papows had been president of Ottawa-based Cognos Corp., before Lotus. Analysts said his marketing prowess, with backing from IBM, helped grow Lotus Notes and Domino sales. "Seven years makes a big difference in this market," said President Amy Wohl at Wohl Associates Inc. in Narberth, Pa.

Then last April, *The Wall Street Journal* published reports that Papows trumped up his résumé and stretched the truth about his military background and personal history. Papows still faces charges of sexual discrimination from a female subordinate.

Papows said those allegations didn't factor into his decision to leave. "It was never pertinent from a business perspective to begin with. IBM was never less than fully supportive," Papows said. "It certainly has nothing to do with my decision now."

One business partner, however, disagreed. David Shimberg, chief marketing officer of IT Factory Inc. in Cambridge, Mass., a Lotus independent software vendor (ISV), said Papows' stepping down "removed the black cloud that was sitting over this organization and its most senior manager."

"The fact that Jeff has decided to resign and will stay on to make the transition, from our perspective, is a good decision," Shimberg said. "It clears the air and gives us a better opportunity to build a longer-lasting relationship."

Shimberg said the negative publicity created uncertainty among customers with ISVs hoping to build a better relationship with Lotus. "We've been treading water and it's been a distraction," he added. "Jeff is a good person and he understands the partner, but there was a loss of the ability to move things forward [after the allegations arose]."

OSHA Reverses Coverage

Telecommuter plan widely criticized

BY LINDA ROSENCRANCE

Barraged with criticism from numerous businesses, professional organizations and Congress, Labor Secretary Alexis Herman last week withdrew a controversial government statement that companies are responsible for the health and safety of the nation's nearly 20 million telecommuters.

Herman said that while the statement — in the form of a letter to CSC Credit Services in Houston — clarified the company's questions in 1997 about telecommuters, it also caused "widespread confusion and unintended consequences" for other companies when it came to light last week.

In the Nov. 15, 1999, letter addressing CSC's questions, the Occupational Safety and Health Administration (OSHA) had offered an interpretation of the 1970 Occupational Safety and Health Act, saying that firms that allow employees to work at home are responsible for injuries suffered by those workers. OSHA maintains that the letter, posted on and then removed from its Web site, was never meant to be a statement of policy.

However, several businesses and professional organizations, as well as some Republican members of Congress, said OSHA overstepped its bounds when it said employers could be responsible for correcting a home's design as well as its ventilation, heating and cooling systems if those systems posed a danger to an employee while working.

Hewlett-Packard Co., which employs more than 2,000 telecommuters, already provides training on how to set up ergonomically correct home offices, said Anne McGrath, a spokeswoman at the Palo Alto, Calif.-based systems vendor. HP said it would be concerned about the potential implications of an OSHA ruling related to these workers.

Sherry Saunders, a spokeswoman for the Center for Office Technology, an Alexandria, Va.-based group of computer makers and users, said an OSHA ruling covering telecommuters would force some workers to get out of their home offices. "Some employees will not be able to work at home," Saunders said.

Renee Winsky, a vice president at the Information Technology Association of America in Arlington, Va., said OSHA's initial decision to cover telecommuters wouldn't suit the needs of businesses that use telecommuting as a retention and recruiting tool. The regulations "could affect workers' privacy, if . . . employers need to monitor home work spaces," said Winsky, who applauded Herman's decision to withdraw the statement.

Others cited the threat of rising costs. Hank Austin, manager of safety and environmental affairs at auto insurer USAA in San Antonio, said any OSHA move to cover telecommuters would be "of great concern" for its impact on workers' compensation plans.

JUST THE FACTS

Healthy Work

OSHA is deciding whether workplace rules apply to telecommuters

- In a Nov. 15 letter, the agency said employers could be liable for injuries to telecommuters.
- After that interpretation of the 1970 OSHA Act sparked controversy, the agency withdrew its interpretation.
- Experts/observers say the upshot will be a new set of regulations that conform to the needs of businesses in the 21st century.

Staff writer Julekha Dash contributed to this story.

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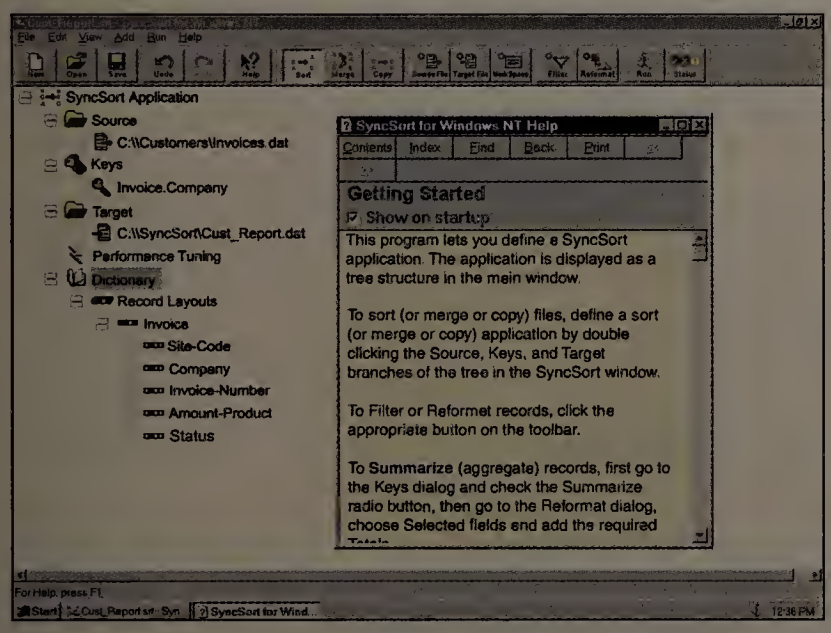
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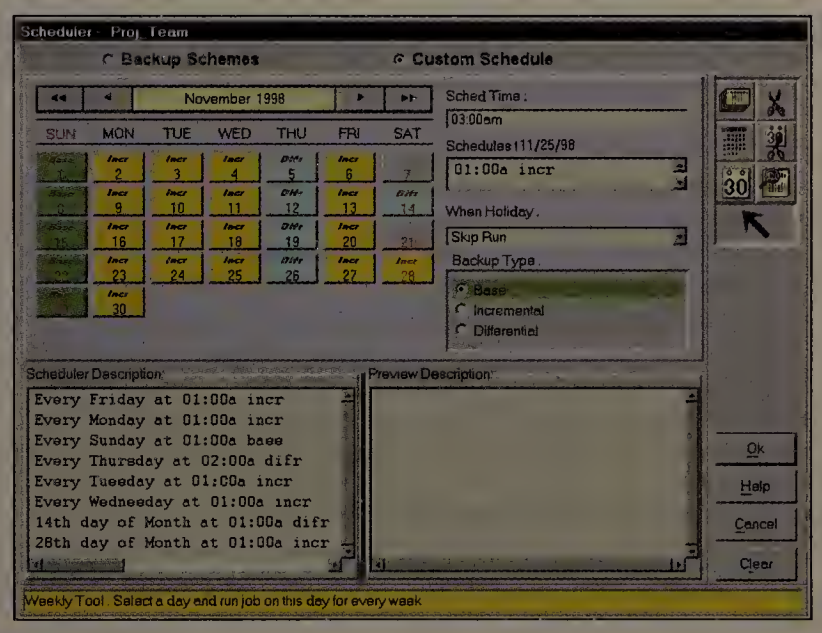


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Consumers Gripe About Web Shopping

Late deliveries and out-of-stock items lead the list of electronic-retail complaints

BY CAROL SLIWA AND STACY COLLETT

SURELY there were plenty of happy Web retail customers this holiday season, as sales revenue soared more than 250%. But everywhere you turn, there are tales of online shopping woes, late deliveries, phantom purchases and out-of-stock items.

Fulfilling orders for popular toys, in particular, caused a lot of frustration.

Julie McHugh of Stoneham, Mass., thought her quest for one of the season's hot items, Girl Tech Password Journals, was over when she placed an order at eToys.com and got an e-mail confirmation. She said she didn't learn until at least a week later that the items were out of stock — "which lost a lot of time for me."

She never did get the Girl Tech journals from eToys and purchased a different gift.

Jonathan Cutler, a spokesman for eToys Inc. in Santa Monica, Calif., said his company handled most orders extremely well, pointing to BizRate.com surveys that give the site high marks for customer satisfaction.

He claimed that the site does real-time inventory checks and said he couldn't speculate what caused the problem. "Obviously, we saw a surge in orders, and we weren't perfect," Cutler said.

Remedying Problems

Next year, electronic retailers need to "improve the scalability of their fulfillment so they can handle a larger volume of packages," said James Vogtle, a Toronto-based analyst at The Boston Consulting Group. That will mean building up the capability in-house or outsourcing it, he said.

A customer survey conducted by BancBoston Robertson Stephens Inc., in conjunction with BizRate.com, showed that overall customer satisfaction declined as the 1999 holiday season wore on, particularly among consumers visiting online toy shops.

Top Three Holiday Shopping Concerns

Late delivery	56%
Security of credit card/personal information	50%
Out-of-stock items	38%

SOURCE: BIZRATE.COM

"Real-time, two-way, back-end integration is really a large part of the answer, at least from a technology perspective," said Chris Selland, an analyst at The Yankee Group in Boston.

Retailers could also improve forecasting with supply-chain management systems, carry extra inventory or hire more workers to meet customer need, he added.

Helen Frongillo of Somerville, Mass., asked LillianVernon.com to mail the building blocks she bought online for her grandchild to her daughter's home in Bar Harbor, Maine. Instead, the blocks arrived in Somerville, and Frongillo footed the bill to mail the gift to Maine.

David Hochberg, a spokesman for Lillian Vernon Corp. in Rye, N.Y., said the company would have been happy to pay the added shipping charges if Frongillo had called.

The company "has an old Web site," Hochberg said. He acknowledged that Web orders are manually re-keyed into back-end systems, which may have contributed to some errors. But he promised that the problems would be solved soon when the company launches a new, more technologically sophisticated site.

However, customers who had bad experiences may not ever shop online again. "I really don't think I would because you can't depend on it," said Frongillo, who also had problems with timely deliveries from another online merchant.

Nearly 10% of online shoppers surveyed by the Software & Information Industry Association, a Washington-based trade association, found their holiday experiences annoying enough to abandon their purchases.

MOREONLINE

For *Computerworld* coverage of retail technology and related links, visit our Web site.
www.computerworld.com/more

Retailers need to "improve the hooks between customer service and order systems," said Anne Griffith, research director at the association. But she acknowledged that the cost of such back-end Web integration is at least $100,000.

Griffith said electronic retailers who can't afford to connect inventory systems to the Web are good candidates for outsourcing. "While it may look expensive on first blow, it's very expensive to build it yourself — and it's very expensive to lose customers," she said.

J. D. Edwards To Host Apps

BY CRAIG STEDMAN

J. D. Edwards & Co. last week launched an Internet-based application hosting service for its enterprise resource planning (ERP) and supply-chain management software.

The Denver-based vendor previously left the hosting of its applications to IBM's professional services unit and other outsourcing companies — an approach that has snared about 40 customers. Now J. D. Edwards will offer to manage applications directly for users.

That would reduce the layers users have to deal with, said Kevin Smith, information systems manager at Spyder Active Sports Inc. in Boulder, Colo. Spyder, a $25 million designer of sports apparel, plans to go live this month with an installation of J. D. Edwards' OneWorld ERP system that will be hosted by an outsourcer.

But working directly with an application vendor may not always be the best way to go, Smith said. For example, Spyder's Denver-area application service provider "acts as our advocate when we deal with J. D. Edwards," he added.

Other ERP vendors are split on whether to host applications themselves. Oracle Corp. is making a big hosting push, while SAP AG is leaving that to outsourcers. PeopleSoft Inc. also has relied on outside firms, but the Pleasanton, Calif.-based vendor plans to start doing some of its own hosting this year.

FAA Computer Problems Delay Flights

Computers down in separate, non-Y2K-related incidents

BY LINDA ROSENCRANCE AND SAMI LAIS

Computer problems in Federal Aviation Administration air traffic control centers caused flight delays twice last week in parts of the Northeast and once in the Southeast. None were Y2K-related.

FAA spokeswoman Alison Duquette said problems occurred last Thursday at 6:15 a.m., when the air traffic control center in Leesburg, Va., experienced a data-transfer problem between a peripheral device and the main computer, causing the main computer to overload.

Duquette said the center then made a transition from the main computer system, the Host and Oceanic Computer System Replacement, to a backup system, known as the Direct Access Radar Channel.

That transition caused delays of up to two hours throughout the Northeast because the backup system runs slower than the main system, Duquette said.

Frank Prince, an analyst at Forrester Research Inc. in Cambridge, Mass., said the decision to use a slower backup system was more political than technical.

"How slow is slow depends on how much it costs to have a completely redundant system in place," Prince said.

The system was down for about three hours.

"We do not know what caused the problem yet," Duquette said. "But we do not think it was Y2K-related."

Last Monday night, a mainframe computer outage at the FAA's Air Traffic Control Center in Nashua, N.H., caused flight delays throughout the Northeast. A bad bearing in a disk drive assembly was believed to be the culprit.

The 1987-vintage IBM logical disk drive assembly (LDDA) had failed early in the day and was taken out of service, said Jim Peters, the FAA's New England spokesman. It was when the device was put back online at about 7 p.m. that the problems started.

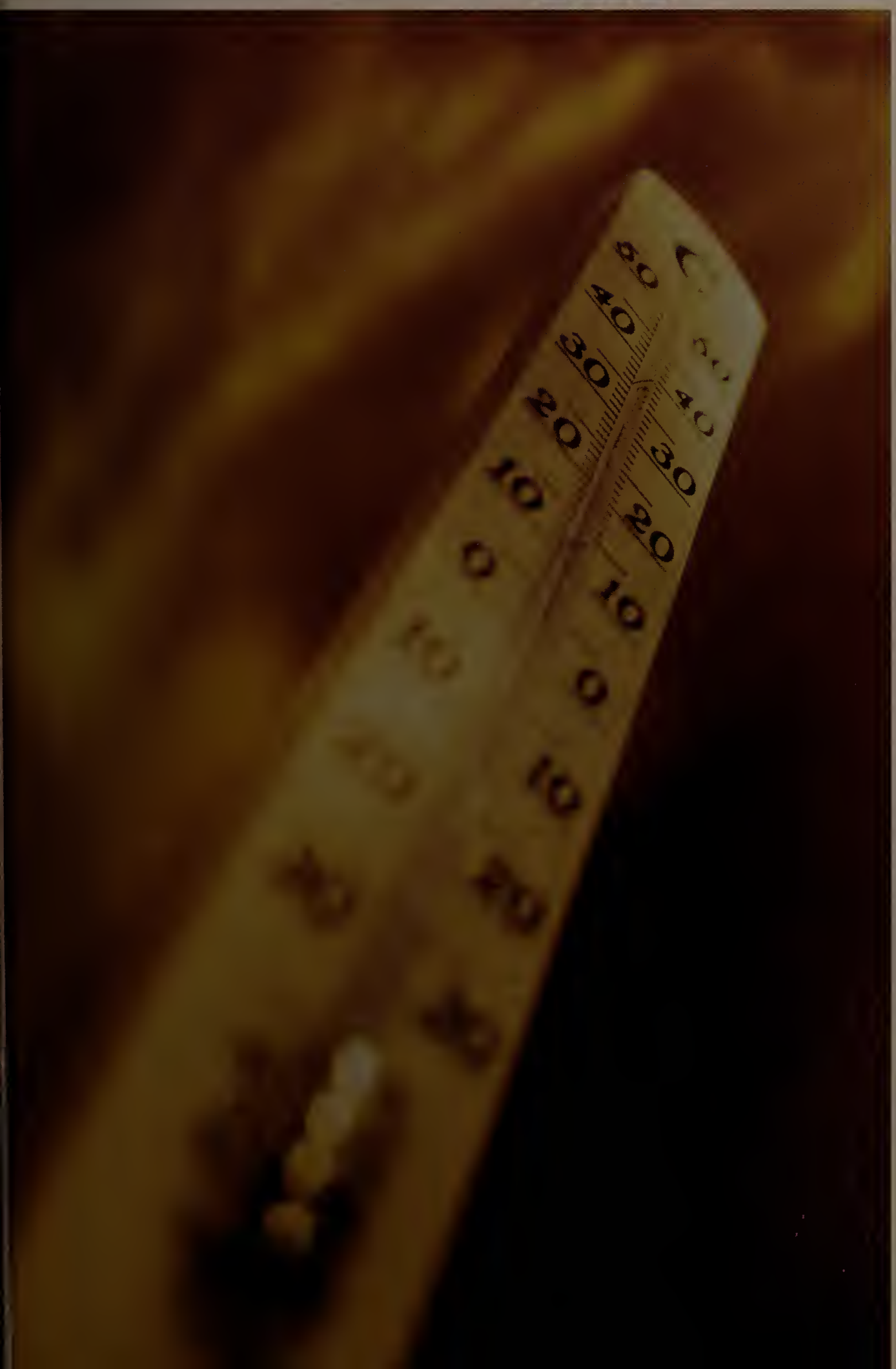
"At 7 p.m., for some reason, the LDDA was brought back online and began spewing out multiple error messages," Peters said. "That's when we took the host out of service and went to backup." Because information had to be entered manually into the backup system, operations were slowed and delays resulted.

Not on Time

Airports affected by Thursday's FAA glitch:

AIRPORT	LOCATION
Kennedy, LaGuardia	New York
Newark, Teterboro	New Jersey
Logan International	Boston
Raleigh-Durham	North Carolina
Reagan National, Dulles	Washington
Baltimore-Washington	Maryland

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BRIEFS

SAP, Siebel Integration

Software Technologies Corp. in Monrovia, Calif., this week plans to announce application integration software that links SAP AG's R/3 enterprise resource planning system to San Mateo, Calif.-based Siebel Systems Inc.'s sales automation tools. Pricing starts at $100,000.

Online Travel Booming

Online travel bookings in 2001 should jump to $30 billion, up from $5 billion in 1999, Stamford, Conn.-based Gartner Group Inc. said last week. The explosive growth means that leisure travel agencies not already online will be driven out of business or acquired, according to Gartner analyst Lou Marcoccio.

Medical Claims on Net

Healtheon/WebMD Corp. in Atlanta and HNC Software Inc. in San Diego have partnered to let physicians and property and casualty insurers process medical claims via the Internet. Physicians may be able to file insurance paperwork on the Internet as early as this summer.

Intel to Build Linux Web Appliances

Intel Corp. is designing Web appliances that will run a tailored version of Linux. The chip maker hopes to sell the devices to Internet service providers, telecommunications firms and other service providers. The move would bring Intel into direct competition with manufacturers such as Compaq Computer Corp., which has demonstrated its own version of Microsoft Corp.'s Web Companion design, based on Windows CE.

'Smart' Vending Deal

Maytag Corp. is teaming up with eVend.net Corp., a maker of technology to control vending machines and appliances over the Internet, to create a smart vending machine that can process credit-card transactions and dispense large goods such as clothing. Maytag will have exclusive rights to use eVend's embedded Internet connectivity technology in its vending equipment.

Updated Wal-Mart Site Offers Travel Services

Site caters to Web newcomers but doesn't offer price rollbacks customers might expect

BY STACY COLLETT

IN A DEPARTURE FROM its typical retail roots, Wal-Mart Stores Inc. in Bentonville, Ark., is going into the travel business.

The redesigned Walmart.com Web site, which was launched Jan. 1, now offers airline, car rental and hotel booking capabilities.

Wal-Mart also announced last week that it's setting up a separate company for its Web business, called Wal-Mart.com Inc., to be based in Palo Alto, Calif. Accel Partners, a Silicon Valley venture capital firm, will own a stake in the company. The Web business will have a separate board of directors and management team.

Developed by Quantum Leap Communications Inc. in Chicago and software supplier Site & Sound Software Inc. in Portland, Ore., the travel site caters to Wal-Mart customers who are unfamiliar with booking travel online.

In addition to a simple low-fare finder and hotel booking process, the site features a customer service section that helps educate site visitors about online travel. Customers also can call a customer service center.

Basic Service

"For now, we're addressing the basic travel needs of our customers," said Walmart.com spokeswoman Melissa Berryhill. "We do plan to evolve into more sophisticated offerings as we learn more about the business and our customers." Berryhill declined to elaborate.

One thing customers won't see on the site, however, is lower travel prices than those offered by online competitors.

"Currently, the savings that a Wal-Mart customer usually sees in the retail sector they're not going to see on the travel site, which I think will be a hindrance to Wal-Mart," said Krista Pappas, an analyst at Gomez Advisors Inc. in Lincoln, Mass.

Pappas said if Wal-Mart begins offering travel packages, with air, hotel and car rentals negotiated at lower rates, customers will start to see savings.

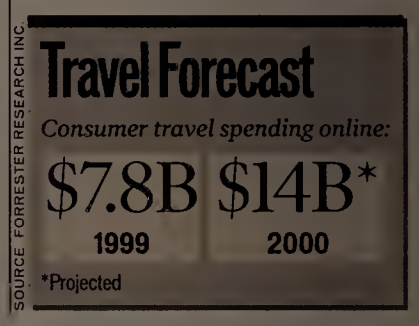
Wal-Mart is not the first to stray from its core business into the travel market. CNN, Rand McNally & Co., iVillage Inc. and Hoover's Inc. have full-fledged travel-booking engines as part of their sites.

"Wal-Mart is following the steps of other companies who have a strong online presence and want to get into travel as a way to better serve their existing customers and generate incremental revenue," said Henry Harteveldt, a senior analyst at Forrester Research Inc. in Cambridge, Mass.

David White, marketing director at Site & Sound Software, said companies can spend $1 million to $5 million to add a booking engine to their sites.

Forrester estimates that consumers will spend $14 billion on online travel this year — up from $7.8 billion last year.

Some observers said Walmart.com and its travel site won't make a splash online. "Wal-Mart is not going to do to the Internet what they did to small-town America," said Barry Parr, an analyst at International Data Corp. in Framingham, Mass. "They're facing a completely different class of competitors."



Billing App Drains City Utility

Ann Arbor claims $2.8 million loss

BY DAVID ORENSTEIN

City officials in Ann Arbor, Mich., estimate that trouble with utility billing software caused the city's water department to underbill customers by $2.8 million.

The city's Water Utilities Department implemented a software package from Aquilium Software Inc. in Mississauga, Ontario, in June 1998. Since then, the city has had several problems, said city Finance Director Dean Moore.

In one instance, the Windows NT-based system was misunderstanding an early payment incentive and giving some of its 34,000 customers a credit they didn't deserve, he said. The package also misapplied to commercial accounts a summertime billing policy that holds down costs for residents. The city has been working with Aquilium for months to upgrade the software, but the process has been very slow because the vendor has been able to provide staff only intermittently, said Moore.

Aquilium Executive Vice President Chris Gadula said he first learned of the complaint in Ann Arbor — which has commissioned a formal audit from a Big 5 accounting firm — from a report in the local newspaper last week. "When we read it, we were shocked," he said. Gadula said the company's software is running well in numerous cities worldwide, including 30 in the U.S.

Greg Galluzzi, president of TMG Consulting Inc. in Austin, Texas, confirmed that Aquilium's software doesn't generally inspire complaints but added that it might still need to mature. He said Ann Arbor's summertime billing policy is common among utilities and often requires packages to be customized. When small cities have trouble with billing software, he said, it's often because neither the city nor the vendor has had adequate resources to test the systems thoroughly.

ERP Woes Hit Grainger Again

BY CRAIG STEDMAN

For the third straight quarter, Chicago-based W. W. Grainger Inc. expects problems related to the installation of a new SAP R/3 system to put a big damper on its earnings.

Grainger, a $4.3 billion company that sells manufacturing supplies and spare parts, said Friday that its profits for the fourth quarter of last year could be as much as 45% below Wall Street's average expectation of about $50 million.

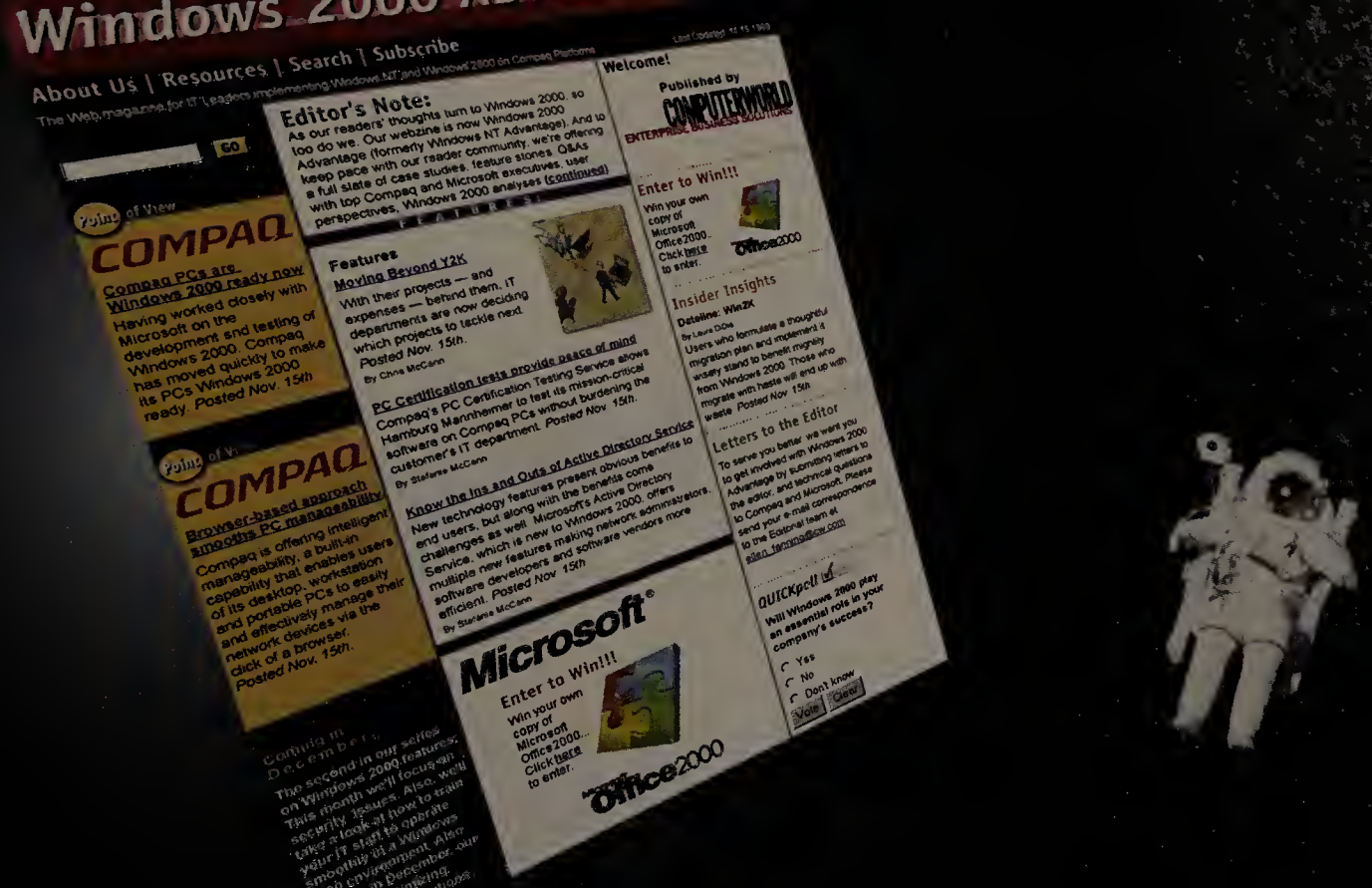
The big culprit continues to be an enterprise resource planning (ERP) system based on SAP AG's R/3 software. Problems with the system, which was turned on last spring, already cost Grainger $19 million in lost sales and $23 million in reduced earnings in the second and third quarters of 1999.

As of Dec. 31, Grainger officials said, a physical count of inventory showed that the ERP software was counting more products than were actually on hand in its six warehouses.

That problem will affect fourth-quarter earnings, and Grainger said salary and employee benefit costs were also higher than expected as a result of costs associated with installing the ERP system and doing the inventory count.

David Dobrin, an analyst at Benchmarking Partners Inc. in Cambridge, Mass., said installing an ERP system can be an especially thorny task for a company such as Grainger.

"They have an extremely complicated business model and lots of [facilities]," said Dobrin. "It's the sort of thing that puts a lot of pressure on anybody's ERP system, not just SAP's."





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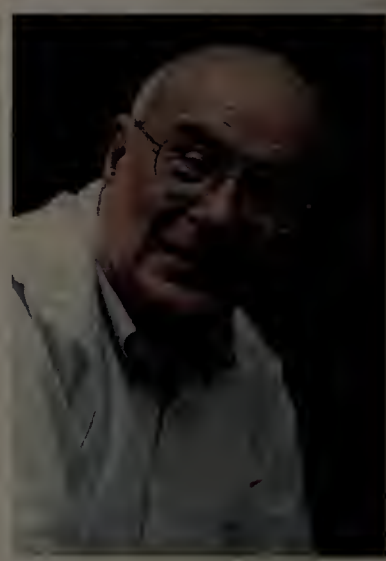
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COMPUTERWORLD
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Internet Pioneer Will Help Guide FCC

University of Pennsylvania telecommunications professor and Internet pioneer **David J. Farber**, a longtime outspoken voice on Internet-related issues, last week was appointed the Federal Communications Commission's chief technologist. Farber, who helped design the first electronic switching system, also testified on behalf of the government in the Microsoft Corp. antitrust trial. In an interview last week with *Computerworld* reporter Patrick Thibodeau, Farber said that despite his new post, he will retain the freedom to speak his mind.

Q: What does the job of chief technologist entail?
A: Part of it is taking part in the internal discussions as policy is evolved. It's to help educate — and I mean that in the very best of ways — the commissioners who are interested in where the field is going. Everything is sort of a three-legged stool in this business: the economics, general policy implications and the technology. And if you only have two legs, it's really tricky. I think a large part of my task internally is to be that third leg.



DAVID FARBER: "You can't [set policy] without understanding the technological limits and capabilities out there"

Q: How influential is this position?
A: It's as influential as you want to make it, as far as I can tell. I think my past performance shows that I have a tendency to say what I think and be very persuasive about it.

Q: In making your appointment, the FCC chairman said your help would be needed in ensuring universal broadband access. What kind of help and ideas will you offer?
A: The issues involved in broadband have a big component of technology. You can't [set policy] without understanding the technological limits and capabilities out there. Otherwise, you come up with a policy that can't be used or severely cripples new markets. My conversations with the chairman indicate that that's the type of input they would like.

Q: Are you at odds with the Clinton administration's hands-off approach to Internet policy?
A: No. My attitude has always been to the networking community: If we don't fix it, adult supervision will be required. And adult supervision in this world means government. ◗



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Companies Seek Y2K Relief From Insurers

Claiming that date field problem was a software defect, they want to recover costs

Jeff Jinnett, head of the year 2000 practice at New York law firm LeBoeuf, Lamb, Greene & MacRae LLP, has been tracking legal implications of Y2K since 1996 and has testified on the issue's potential impact before the U.S. Senate. Jinnett spoke with *Computerworld* reporter James Cope, who is the author of *Y2K: Lessons Learned from World-Class Companies* (Macmillan Computer Publishing, 1999).



JEFF JINNETT: Y2K issues will continue

Q: What specific year 2000 legal issues should concern companies?

A: There are those that will continue, despite our having a seamless transition for the most part. One is the so-called "sue and labor" case. There are a number of cases pending [in this category]. GTE, Xerox, Nike, Unisys, Port of Seattle all have sued their insurers seeking to recover [millions of dollars in] year 2000 remediation costs.

Q: What exactly do you mean by sue and labor?

A: The theory of the GTE, Xerox and similar lawsuits is that the year 2000 problem was a defect, like a defect in a ship engine. So the insured discovers they have this defect in their systems and spends money to remediate those defects. The insured is claiming had they done nothing, the defects would have ended up as covered under the policy.

Q: How would an insurance company respond?

A: The insurance company would typically say it doesn't agree that the year 2000 defect is a covered occurrence because the insured knew about the problem maybe 10, 20, 25 years ago but deliberately chose to use two digits for the century field to save memory and expense.

Q: In what other ways are companies seeking recovery?

A: Some companies have filed notices of claim with their insurance companies [saying] the insured feels the insurance company should reimburse year 2000 remediation expenses. You [also] might have an insured ask the insurance company to enter into a "stand-still agreement." This indicates the insured reserves its rights to file a notice of claim, and the insurance company reserves its rights to object to it and deny coverage. This is essentially saying, "Let's stand still until they've sorted this out [through other court cases] before taking any action."

Q: Is this just about recovering remediation costs, or do companies have other risks here?

A: If you're a public company and you've incurred significant year 2000 remediation costs and you don't file a notice of claim, you don't pursue recovery, and GTE or Xerox or Unisys wins, you might get sued by your shareholders, who then argue that as a company, you're guilty of corporate waste. ◗

MOREONLINE

For resources related to Y2K and legal issues, visit our Web site.
www.computerworld.com/more

Year2000.com Domain Draws Phony $10M Bid

Owners scrap auction; others try to cash in

BY STACY COLLETT

After six years of stirring the pot about possible Y2K glitches on his Year2000.com Web site, Canadian computer consultant Peter de Jager says he's used to hate mail and pranks.

But the bidding that occurred on eBay.com from Dec. 22 to Jan. 1 for his domain name may have been the biggest prank of all.

The $10 million winning bid for the Year2000.com name turned out to be a hoax — as were at least four other bids above $2 million. Thirteen bids were received for the name.

De Jager and his partner, The Tenagra Corp. in Houston, have decided to scrap the auction and sell the domain name privately.

In an interview with *Computerworld* before the auction ended, de Jager was skeptical about the high bids when the price reached $4.5 million. "Quite frankly, I believe it's a hoax," he said. "I get enough hate mail on a day-to-day basis that [I know] there are more than enough people that would just like to annoy people."

Tenagra officials said the person placing the $10 million bid registered as a company and referred to several business associates. Those associates denied making the bid or knowing the bidder. "It appears the same person was using multiple IDs to make multiple bids," said Tenagra President Cliff Kurtzman. Attempts to reach one bidder's e-mail address, linked to a student ID at a university in Arizona, didn't work, he said.

The domain name went up for sale Dec. 22 on eBay Inc.'s auction site after Year2000.com site owners decided their work in creating awareness of possible Y2K glitches was done. The previous record for the sale of a domain name was held by business.com, bought for $7.5 million by eCompanies LLC in Santa Monica, Calif., from Houston entrepreneur Marc Ostrofsky.

Meanwhile, the prank hasn't stopped cybersquatters from cashing in on other millennium-related domain names (see chart).

An eBay spokesman said the company advises sellers of auctioned items to contact bidders immediately to verify unusually high bids. EBay suspended the prank bidder for the Year2000 domain, spokesman Kevin Pursglove said. ◗

For Sale

EBay auctions have offered these similar domains:

- Year2000website.com
- Yyear2000.com
- Year2000AD.com
- Year2OOO.com (letter O)
- Date2000.com

SOURCE: EBAY INC

Retailers, Government Still Vigilant for Y2K Glitches

Cathy Hotka, vice president of information technology at the National Retail Federation in Washington, spent much of last week at the White House's Information Coordination Center. The center is still on the lookout for year 2000 problems. Hotka spoke with *Computerworld* reporter David Orenstein.



CATHY HOTKA: Just nuisance glitches seen

Q: Did things go as smoothly for retailers?

A: I think the operating assumption among most [retailers] was that we would have problems not only with small retailers, but also with suppliers, particularly suppliers in smaller Third World countries. So far, that has not been the case at all. What we've seen so far . . . is nuisance glitches, which retailers are finding and fixing on the fly.

Q: For example?

A: We're seeing reports spitting out with the wrong dates.

Q: Are CEOs asking why they had to spend so much when other nations didn't and also sailed by?

A: I'm sure that those questions will be asked, but I think answering them is going to be relatively easy. We, as a group, embarked in the summer of 1997 on a joint retail industry mission to find out whether retailers needed to spend this money. We found out, for instance, that 100% of private-label credit-card management systems were not going to make it. We found out that 99% of warehouse management systems were not going to make it.

Q: What do people think we've learned?

A: The consensus is that we need to make sure this does not happen again. The reason we had to do all this work and spend all this money is because there was probably not a sufficiently well-developed sense of the reliance of any business on IT. As we move our business online, as networks become more important, as trading partners talk to each other electronically, as a matter of course, we need to make sure that information is protected.

Q: What can retailers do with all the data about systems they compiled?

A: We found a tremendous duplication of effort and expense in systems. One of our expectations is that retailers will take this inventory, maintain it and be able then to create a much better, higher-level view of how technology is used. We think they will be able to save money in the long run. ◗



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YEAR 2000 CHRONICLES: EPILOGUE

A Last Check at Six Users

After years of costly work, date change brought IT benefits, with very few glitches

THE SIX COMPANIES *Computerworld* followed in its Year 2000 Chronicles series were braced for disaster but expecting a normal day when the century changed. They encountered the latter. What follows is the series epilogue, by Gary H. Anthes, Thomas Hoffman, Maryfran Johnson and Julia King.

Merrill Lynch

When it comes to the $520 million Merrill Lynch & Co. committed to its year 2000 project, Executive Vice President Ed Goldberg said he considers the money well spent. "I can't begin to imagine what would have happened if we didn't commit the resources we did to this problem," said Goldberg, who has overseen the brokerage's Y2K efforts.

Because Merrill Lynch has passed through the date change with only a few minor issues — such as the wrong dates stamped on a few reports — the New York-based firm suspended its command center coverage on Friday, said Jim Murtha, the firm's senior vice president of mandated initiatives.

Merrill Lynch's command center will be back in business to track end-of-month, leap-year and end-of-quarter processing, Murtha said.

CIBC

John Burns said he sensed that the world's year 2000 transition would go smoothly. But it has gone even better than anticipated, with none of the infrastructure snafus he expected.

In fact, the Y2K transition at Canadian Imperial Bank of Commerce (CIBC) has gone so well that the bank is lowering its total Y2K budget from $164.68 million (U.S.) to $159.88 million, said Burns, CIBC's vice president of projects.

The Toronto bank has also downsized its Y2K project office, sending employees to work on new assignments. Meanwhile, the bank will keep an eye on end-of-month and leap-year processing, said Burns. "We anticipate those dates will go as smoothly as the other ones we've had," he added.

Nabisco

"It was a big yawn," Nabisco Inc.'s Tony Del Duca said of the Y2K nonevent. "Everything had been scripted out, and we just took it step by step by step. There were virtually no surprises other than we executed much faster than we thought we could."

Del Duca, who is the vice president of enterprise supply-chain systems at Nabisco, attributed the smooth sailing to three years of careful planning and good project management.

But was it all really necessary? "The fallout will be, 'Why did you spend all that money?' " Del Duca said. "But in retrospect, our [systems] portfolio would not take us there. The systems were defective, and we had to replace them."

The project turned out to be a lot less painful than the Y2K managers at Nabisco thought it would be, Del Duca said. "The only surprise, maybe, is that we are all still here and flourishing."

Spending on Year 2000 Fixes

COMPANY	ESTIMATED BUDGET JANUARY 1998	ESTIMATED BUDGET JANUARY 2000
Merrill Lynch	$200M	$520M
Nabisco	$22M	$40M-$45M*
Conectiv	$3.25M**	$12M-$15M
Canadian Imperial Bank of Commerce	$150M	$159.88M
Union Pacific***	$61M	$56.6M
C. R. Bard	$11M****	$11M

* Includes both data processing and embedded systems
** In January 1998, was Atlantic Energy; merged with Delmarva Power & Light Co. in 1998
*** Union Pacific rail operations kept within a $46 million budget
**** Reduced from a 1997 estimate of $16 million

Conectiv

Chris Arena, former Y2K project manager at Conectiv, makes no apologies and has absolutely zero regrets about spending nearly $15 million to prepare the $2 billion electric utility's computer systems for the new millennium.

So what if it was a nonevent in the public's eyes? And so what if not a single reporter showed up on New Year's Eve to interview executives or eat the holiday snacks the company had set out in a special press room outside of a Y2K war room in Newark, Del.?

What counts, Arena said, is "we had no showstoppers. We spent close to but less than $15 million, and that's something we can be proud of, especially since a lot of other companies spent triple that amount and have no more to show for it."

New Year's Eve went off without a hitch at Conectiv, as system after system rolled over to 2000. The one glitch that surfaced later was with a little-used tax application that had been slated for retirement in 1998 when two regional utilities merged to form Conectiv. As it turned out, finance workers who had signed off on scrapping the system had continued to use it anyway.

"It's really a nuisance thing," Arena said. "We didn't expect to be running the application at this time. But it's still the little things that get people nervous."

Union Pacific

When all was said and done at 12:01 a.m. on Jan. 1, Union Pacific Corp. was able to put back in its pocket $4.4 million of the $61 million it had budgeted for Y2K readiness.

"We had the [nearly] $5 million for contingencies that we didn't need," said Tim Brechbill, year 2000 project manager at the $9 billion rail company. "For all practical purposes, we found nothing [in the way of problems] at all."

What excitement was to be had during the systems rollover came just after midnight on New Year's Eve, when, in a totally non-systems-related incident, the electric power at one of Union Pacific's Nebraska facilities went out. "Somebody had shot a transformer in celebration," Brechbill said.

Of the $61 million Union Pacific had budgeted for Y2K fixes, $46 million was spent on systems related directly to the railroads, including a companywide upgrade of 14,000 desktops to Windows NT. Other notable Y2K project-related benefits include a new companywide voice mail and conference-call system that was replaced rather than upgraded.

For Brechbill, Y2K is already a thing of the past. On Jan. 3, he distributed requests for proposals for new customer relationship management software, a project he'll be managing for at least the next year.

C. R. Bard

Paul Maszczak, the Y2K czar at C. R. Bard Inc., actually slept through the turn of the century after a final 6 p.m. check that night at the Murray Hill, N.J.-based company's data center. "I'm kind of sorry it went so smoothly. We had not a single problem anywhere," he said. "If it had gone badly, we would have been more appreciated! It's not really a letdown that I'm feeling, but something is definitely missing."

The only snafu that appeared in the aftermath of Bard's $11 million Y2K project was a user mistakenly entering 01/01/99 instead of the correct "00" for the year. "He thought it was a Y2K problem, but it was a brain problem," Maszczak chuckled.

As for the criticisms that information technology people overhyped the year 2000 problem and overspent to fix it, he dismissed such claims. "Good people always make it look easy," he said.

MOREONLINE

To read Chapters 1 through 7 of the Year 2000 Chronicles series, visit our Web site.
www.computerworld.com/more

BRIEFS

Cyberspace: The Next Battleground

The use of cyberwarfare to attack enemies is "just going to be one more arrow in the quiver" that the U.S. Department of Defense will use against hostile countries and groups, said U.S. Air Force Gen. Richard Myers at a briefing last week. Myers, who is expected to become vice chairman of the Joint Chiefs of Staff March 1, warned that cyberattacks will be used by other countries against the U.S.

Hospital Announces Plans to Cut IT Staff

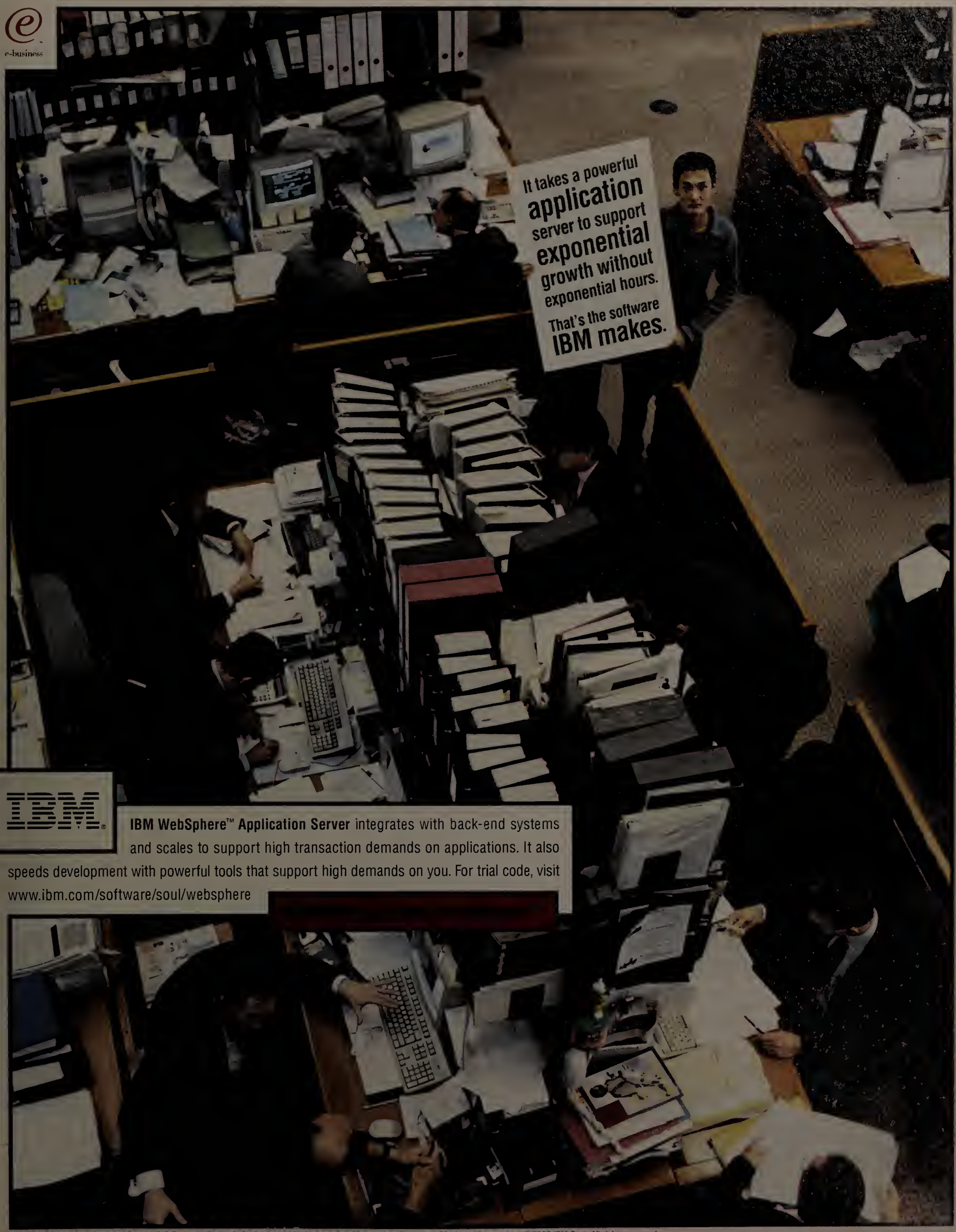
As part of a $20 million payroll reduction, Beth Israel Deaconess Medical Center in Boston will lay off several employees, including information technology workers. Beth Israel Deaconess said the number of layoffs would probably be in the low hundreds.

IT Staffing to Expand

IT recruitment and consulting firm IT Staffing Ltd. has closed a $1.5 million private placement arranged by J. P. Turner and Co.

The cash raised will fund three acquisitions, an expansion of IT Staffing's credit facility and the launch of business-to-business recruitment technology.

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Continued from page 1

Y2K Spending

that the U.S. overspent by as much as $41 billion on Y2K, compared with the spending of and impact in other countries.

That includes some $2.7 billion doled out to employees who sat idly in Y2K command centers over what turned out to be a boring weekend.

Y2K expert Leon A. Kappelman dismissed those figures as representing less than the normal percentage of waste for any IT project. About 25% of all IT projects "fail to deliver anything," Kappelman wrote in an e-mail newsletter. And 25% of IDC's overall global Y2K spending estimate would be almost $71 billion. So, "even if the $41 billion [in Y2K waste] figure is accurate, that is still a smaller percentage than normal IT project waste," wrote Kappelman, who is an associate professor at the University of North Texas in Denton.

Few senior managers seem to think any portion of their Y2K budgets was wasted. Y2K "was first and foremost a risk-control project to protect us against a risk we couldn't afford to take given the nature of the service we provide," said Paul Pender, vice president of finance at Northern States Power Co. (NSP), a Minneapolis utility with 1.5 million customers in five states.

As the date rolled over, NSP didn't experience any significant glitches, which made the $24 million project worthwhile, said Pender. If the utility had suffered any problems, he said, restoring public confidence would have been an uphill struggle.

"You can't put a precise dollar amount on public image, but the value of our public image is a lot more than" $24 million, he added.

Internationally, technological comparisons are practically moot. For instance, factories in China that handled the date change as smoothly as General Motors Corp. in Detroit have considerably less automation. "Obviously, some countries aren't as technologically dependent [as the U.S.]," said Johanna Brudvig, Y2K communications coordinator at Crestar Bank in Washington.

Old-fashioned technology can also be found in the U.S., of course. For example, New York Presbyterian Hospital checked more than 57,000 biomedical devices for Y2K readiness and discarded many of them, said Louis Reuter, executive vice president at the hospital, which owns 26 hospitals and 89 other clinical-care facilities.

For many organizations, Y2K projects provided other long-term benefits, including improved asset management, strengthened contingency plans and improved communication among disparate business units.

Medtronic Inc. developed a Web site last March that will continue to allow hospital customers such as Nashville-based Columbia/HCA Healthcare Corp. and patients to gather information about all the medical devices it sells. Had Minneapolis-based Medtronic not spent $26 million on Y2K, said IT director Susan A. Frank, "we wouldn't be taking orders or shipping products."

Adds Lyn McDirmid, CIO at Virginia Electric & Power Co. in Richmond, Va., which spent $25 million to become Y2K-ready, "Our job is to keep the lights on. To do that, we do an awful lot of preventive maintenance, and [Y2K] was another one of those exercises."

Reporters Matt Hamblen and Julekha Dash also contributed to this report.

Computerworld Quick Poll

Respondents to our online survey last week were largely positive about their companies' reactions to Y2K. To vote, go to www.computerworld.com.

If your Y2K transition went smoothly, will the business side of your company:	
Praise the money/effort expended	61.7%
Criticize the money/effort expended	15.1%
Take IT calls of alarm less seriously	13.9%
Look to cut your budget	9.0%

TOTAL VOTES: 1,862 (as of Jan. 6)

FAA Lax in Y2K Fixes

Background checks omitted on working foreign nationals

BY LINDA ROSENCRANCE

THE NATION'S AIR traffic control system may be susceptible to intrusion and malicious attacks because the Federal Aviation Administration didn't investigate dozens of foreign nationals hired to fix year 2000 computer problems. That's a violation of its own security policies, according to congressional investigators.

The FAA allowed foreign citizens — including 36 Chinese nationals and citizens of Pakistan, Ukraine, Britain and Ethiopia — access to 15 of its 153 critical computer systems, according to a report issued by the General Accounting Office (GAO), the investigative arm of Congress. The report is available at *www.gao.gov*.

The GAO said one of the systems reviewed by the foreign citizens involved management of U.S. air traffic.

"Because the FAA failed to follow its own policies, they have increased the risk that inappropriate individuals may have gained access to FAA's facilities, information or resources," said Colleen Phillips, supervisor of civil agencies information systems at the GAO.

Since being informed of the security problem by the GAO in early December, the FAA has conducted the background checks it should have done initially, said FAA spokesman Eliot Brenner.

Brenner said the FAA's security policies don't always call for background checks. He said that in some instances a "risk assessment" could be performed, which would determine whether a background check needed to be completed. Neither was done for the foreign nationals.

"The FAA has had real problems with computer security," said Jeff Lungren, a spokesman for the House Committee on Science, which requested the probe. "Looking at what we found, it justified the work."

Continued from page 1

Y2K Legacy

Ward Trucking Co. in Altoona, Pa., said that when he buys software now, he thinks about how it will be used in 10 or 20 years.

"We're a little more cautious, apprehensive and thorough of our analysis of future software investments," said Zupon. "I think it makes us a little more strategic."

For many companies and government agencies, year 2000 work improved inventory records and forced them to write contingency plans — benefits that also could quickly evaporate, warned IT managers.

"There were a lot of things that happened that will be of continued benefit to the state," said Robert Mayer, the Maine state government's CIO. "One thing is our inventory. That is a very valuable piece of information, and it will go out of date in a month unless we make a conscious effort to keep it up-to-date."

In Buffalo, N.Y., the region's major manufacturers, banks and health care providers said they plan to keep alive a year 2000 user group they formed so they can discuss electronic data interchanges, information security, networking and other issues, said Elmer Gau, year 2000 project manager at Goodyear Dunlop Tires NA Ltd. in Buffalo.

"We are going to continue that interest group after Y2K and use it in our general business, so actually we've come out of this in a much better community position," said Gau.

Y2K repairs also opened eyes to the importance of information technology.



FERNANDO BURBANO: Cyberterrorism will get worse

"Senior management, from the secretary on down, now have a much more complete understanding about how important IT is to the organization," said Fernando Burbano, CIO at the U.S. Department of State, where 2,000 IT employees manage systems for more than 260 embassies, consulates and posts.

Burbano said the experiences of the year 2000 problem will help in tackling what he calls the "next Y2K" — meeting the requirements of President Clinton's 1998 directive to improve information security at federal agencies.

"Cyberterrorism is only going to get worse, and you can't use the excuse that it was minimal during the Y2K rollover," said Burbano. "Who knows, those people might have been partying — but they're not gone. That's a fact."

The State Department spent some $200 million on the year 2000 problem, but Burbano said security improvements for its worldwide networks could cost three times that amount. Congress hasn't approved the additional funding that will be needed for those improvements, he said.

Y2K also spurred many companies and agencies to develop business continuity plans — the means to keep operating in the event of a computer failure. Roger Baker, CIO at the U.S. Department of Commerce, said that work will continue. "We intend to move forward from the baseline of Y2K, and not just let the stuff sit," he said.

The year 2000 problem also sparked a computer buying spree, as companies invested in upgrades sooner than they might have otherwise.

"I also believe [the year 2000 problem] made a lot of PC manufacturers rich," said Dennis Phillips, IT director at Joseph C. Sansone Co. in St. Louis, a business tax consulting firm.

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On-site at Global Marine: 'Everything Perfect'

Company's 32 oil-drilling rigs around the world checked for Y2K compliance

BY MARYFRAN JOHNSON
HOUSTON

GLOBAL MARINE Inc.'s first Y2K report that all was well came from a live connection tested successfully between the famed *Glomar Explorer* spy ship — now a Global Marine deep-water drilling ship in the South Atlantic Sea off the coast of Nigeria — and its international headquarters in The Hague, Netherlands.

"Our guy said all systems are a go. Two thumbs up," said CIO Dick Hudson, on-site in Houston with a core team of eight information technology managers who were in it for the long haul on New Year's Eve. The group was overseeing a series of live backups and final systems tests starting around dinnertime at company installations in West Africa, the U.K. and Western Europe.

It was to be a night of such phone calls and e-mails, as one region after another checked in to trade virtual high fives.

Vahram Sarrafian, the Y2K team's electrical engineer, investigated year 2000 compliance on the company's 32 oil-drilling rigs around the world, laboriously checking on the compliance with every vendor involved.

"There were 17 actual fixes, that was all," Sarrafian said. The bulk of the problems were discovered in oil-drilling parameter measurements and in Global Positioning Systems at each rig.

Potential Disaster Averted

The biggest potential disaster was averted with the discovery of a problem with a short-term software license. When Sarrafian was testing the systems of a new drilling ship that is under construction now in Belfast, Northern Ireland, he rolled the date test forward to 2004 to check on that distant leap year. "When we punched in the date, everything went blank," he said. It turned out that the software license expired in 2002 — a great catch, since a longer-term lease was vital.

"That could have been one big problem," Hudson pointed out. "These are huge, sophisticated drilling ships, meant to last for 40 years. Everything on them these days is controlled by computers."



JAMES MCGOON

CIO DICK HUDSON: "All systems are a go. Two thumbs up"

Global Marine, a $1.1 billion company with offices in a dozen countries, employs 4,000 people worldwide. The company reported that its Y2K remediation program cost only about $500,000 — a surprisingly low figure for such a large, far-flung enterprise. The reason for this good fortune: a 1992 conversion to client/server systems, which retired two IBM mainframes and replaced them with servers from Sun Microsystems Inc. and Compaq Computer Corp. That resolved the Y2K problem years before other companies were even paying attention to it.

"We did luck out," said Brenda Hethcoat, MIS manager of user systems at Global Marine. For the past 18 months, Hethcoat has lived and breathed Y2K compliance as the person coordinating the company's entire effort. That has meant handling the verification with suppliers, vendors and contractors, as well as making quarterly reports to the board of directors and administering other internal efforts.

Global Marine was actually done with its Y2K testing in 1996 but then had to retest several systems as vendors reissued newer Y2K-compliant versions of their products. Last year alone, the human resources and accounting software packages had to be reinstalled twice. "Very annoying," Hudson said.

The firm also used three outside contractors: one to double-check contracts and legal issues, another to conduct an internal audit of all systems and a third to perform an operational audit on its oil rigs.

In the final hour, it was a small and weary crowd in the data center. Everyone picked listlessly at the shrimp platter and sipped sparkling cider from Waterford crystal flutes.

"I'm going home to 'sleep the sleep of the saved and thankful,' " said Hudson, quoting Winston Churchill. "When we pack up and leave tonight, it's all over." ◗

MORE THIS ISSUE

IT leaders can exult: "We did it!" writes Dick Hudson. **See page 28.**

European Air-Traffic Control Centers Roll Over With Ease

65 centers report no service degradation

BY DOMINIQUE DECKMYN
BRUSSELS

The Y2K team at Eurocontrol, the European air-traffic control organization that is the equivalent of the Federal Aviation Administration, spent an uneventful New Year's Eve and broke open the champagne at midnight.

At 1:15 a.m. local time, 00:15 a.m. Greenwich mean time, the small communications operations room at Eurocontrol housed about 20 engineers and air-traffic control experts seated at ordinary-looking PCs. Jean-Marie Leboutte, an air-traffic control expert at Eurocontrol, picked up a ringing phone.

"Good evening, Belgrade," he said. "Say that again? No degradation detected in Yugoslavia? Thank you, Belgrade."

One by one, the 65 control centers all over Western and Southern Europe supervised by Eurocontrol called in with the same message: no degradation of services. If any center had gone down due to computer troubles, power cuts or communications breakdown, Eurocontrol was ready to divert air traffic to other regions. But there was no need, and only about 100 planes were in the air at midnight, a fraction of the 3,000 aircraft seen at peak hours, said general manager Yves Lambert.

A standby team of engineers, meanwhile, had already started dinner — a salad bar that featured salmon and scampi. Red and white wine was served. The atmosphere had been relaxed ever since reports started coming in from Australia and Asia. Much of the remaining tension dissipated at about 11:15 p.m., when Moscow reported in. The Moscow air-traffic control center is more sophisticated and more highly automated than those in earlier time zones, said George Paulson, director in charge of safety management, so Moscow was the one to watch. ◗

Y2K: More Signs of the Time

The Federal Reserve ordered extra money put into circulation in the event people made a run on banks and automated teller machines. That put $200 billion in government vaults, up from the $150 billion normally held in reserve.

The Office of Management and Budget estimated that federal expenses related to the Y2K problem would total $8.38 billion over five years, ending in September.

From the "even if it failed, it may not have been a Y2K bug" file:

- 1% to 2% of the nation's 227,000 ATMs are down or out of cash at any given moment.
- One in 10 credit-card transactions fail because of equipment breakdowns, over-the-limit accounts or consumer errors.
- In the past three years, weather problems or equipment failures knocked out power for almost 1.7 million customers in the U.S. and Canada in late December or early January.
- There is an average of just over four rail accidents per year on New Year's Day.
- Pipelines carrying natural gas and other hazardous materials averaged 16 reportable disruptions for Dec. 31 through Jan. 3 over the past three years.
- Public telephone network connections to 911 emergency centers fail somewhere in the country nearly every week.
- Over the past two years, an average of 41 phone system failures affecting at least 30,000 customers for at least 30 minutes have occurred between January and March.
- An average of 25 suspected computer intrusions are reported daily (many affecting multiple users).

Sources: President's Council on Year 2000 Conversion; Alliance for Telecommunications Industry Solutions; Software Engineering Institute of Carnegie Mellon University; *The Wall Street Journal*, Dec. 17, 1999

Just 20% of 241 IT executives surveyed by *Computerworld* last summer said they planned to halt all hardware, software and services purchases during the latter part of 1999. Forty percent expected year 2000 freezes to reduce their total IT spending by 1%, to 20%. The good news for IT vendors at the time: 80% of the spending being withheld was to go to other IT projects. Gartner Group Inc. in Stamford, Conn., meanwhile, said it found that only 5% of all companies worldwide planned to impose a complete systems freeze.

What Did Go Wrong: A Global Roundup of Y2K Glitches

Mostly temporary inconveniences

BY COMPUTERWORLD STAFF

The few glitches attributed to Y2K during the date rollover and afterward were just that — glitches: printer failures, dates with five digits, decimal problems. Most caused little more than temporary inconvenience.

The Federal Aviation Administration fielded 11 reports of system problems, compared with 25 reports on a regular day. They included the following:

■ A "notice to airmen" function, which advises pilots of conditions such as runway lights being out, malfunctioned when the system in the Caribbean developed a problem with its date time code. It failed to recognize dates ending in "00" and deleted those files, said Ray Long, the FAA's Y2K guru.

■ Shortly after midnight Greenwich Mean Time, a printer outage was reported at the Oakland, Calif.-based Oceanic Systems Center. The printouts — with data such as flight status or headings for intercontinental flights — are given to air-traffic controllers. During the brief outage, according to Long, controllers reverted to the old manual system: pencil and paper. And rebooting solved the problem.

Problems Elsewhere

■ On Wall Street, the Securities Industry Association's Y2K command center reported that one exchange discovered a few incorrect stock price values (such as a stock priced at $3,500 per share instead of $35), according to a spokeswoman for the organization.

■ A Web site operated by the U.S. Naval Observatory, the nation's official timekeeper, marked the date as Jan. 1, 19100, early on New Year's Day. According to Navy spokesman John Fleming, the year 2000 software glitch occurred because of an error in a JavaScript written with an older version of the programming language that wasn't Y2K-ready. The problem didn't affect the Naval Observatory master clock in Washington, the nation's official timekeeper since 1845.

■ In South Korea, one problem hit the heating system of an apartment complex and forced residents to shiver their way into 2000. The thermostats failed at midnight and were off-line until 7 p.m. Saturday, when engineers switched the system to manual control, according to Korean media reports monitored in Tokyo.

■ Elsewhere in Korea, local media said two hospitals in Kyonggi province reported failures of a computer-controlled bone marrow measurer and a patient registration system. The latter failure caused a newborn to be registered with a 1900 birth date.

■ In Japan, NTT Mobile Communications Network Inc., the country's largest cellular operator, reported that some phone models were deleting messages received on Jan. 1 rather than older messages. The company advised users to clear their message memories of old messages.

Meanwhile, the public shouldn't expect companies to admit any Y2K errors that aren't visible to the outside world, cautioned a director at the SANS Institute, an information technology research organization in Bethesda, Md. For example, said Alan Paller, the public probably wouldn't find out that one company's human resources system locked up. With everyone carrying the impression that things went so well, no company will want to look like it was the only one that fell down, he said. ◗

Computerworld reporters Sami Lais, Linda Rosencrance, Thomas Hoffman and David Orenstein contributed to this report. Reports from the IDG News Service are also included.

In a Gallop Organization poll of 1,426 people in October and November, banking consumers sounded optimistic about the effects of any Y2K glitches:

■ 55% considered it unlikely ATMs would fail.

■ 59% believed direct deposit processing wouldn't be a problem.

■ 60% said they felt that temporary loss of access to cash was unlikely.

■ 60% believed credit-card systems were unlikely to fail.

■ 66% felt that problems with check processing were unlikely.

■ 70% had received Y2K-readiness information from their banks.

■ 90% were confident their bank was ready for Y2K.

■ 39% said they would definitely or probably keep extra cash on hand.

Among the accommodations made for the many Y2K-related workers: Nike Inc. held a "Celebrate New Year's Eve Early" party – last July – complete with a 32-piece Guy Lombardo-like orchestra, cans of Spam, toilet paper and survival kits, according to a Nov. 24 Cable News Network story.

Y2K signposts from *Computerworld*'s files:

■ 1991: Consultant Randall L. Hitchens' column "Dating Problems Now? Wait 'til the Year 2000," in which he says that organizations that use computers "are sitting on a time bomb," appears on Jan. 28.

■ 1993: Peter de Jager's "Doomsday 2000" article, warning of dangers and costs of Y2K problem, appears in *Computerworld*.

■ 1995: IBM acknowledges the Y2K bug and announces plans to provide its customers with services, tools and support to make "timely year 2000 transitions."

■ 1996: Sen. Daniel Patrick Moynihan (D-N.Y.) warns President Clinton of the "extreme negative economic consequences" that the Y2K issue poses.

■ 1997: At an industry summit, Microsoft Corp. CEO Bill Gates blames Y2K worries on those who "love to tell tales of fear." A year later, Microsoft acknowledges being "slow" on the Y2K uptake.

■ 1998: The White House appoints John Koskinen as its Y2K czar. Most government agencies get a failing grade in Y2K readiness.

A toll-free federal hot line operated under contract to the General Services Administration received 220,000 calls between Jan. 1, 1999, and Dec. 15, according to *The Washington Post*. A recorded message last week said, "As of this time, there have not been any year 2000 problems reported around the world."

MOREONLINE

For more Y2K facts and statistics, visit our Web site.

www.computerworld.com/y2kwatch

Have We Learned Nothing From the Y2K Episode?

De Jager sees little cause for celebration

Peter de Jager, who wrote one of the first warnings about Y2K in *Computerworld* [Sept. 6, 1993], was confident enough that nothing would go wrong, that he spent New Year's Eve on a plane. Yet he laments that few companies learned the lessons Y2K had to teach — about project development, documentation and when to toss systems rather than modify them. He spoke to reporter Dominique Deckmyn on New Year's Day.

Q: Your 1993 story in *Computerworld* estimated the cost of fixing Y2K at between $50 billion and $75 billion. Gartner Group Inc.'s estimate is $600 billion. So you were initially on the conservative side.

A: Very conservative. And one of the things I keep getting asked is, was it all hype, and did we really need to do anything. And I find that really bizarre.

The premise is that there was no problem, that the only reason we spent this money is because people like myself convinced you to do it. And I find that a rather peculiar compliment, in a way.



DE JAGER: Y2K problem postponed

Q: Do you think IT has learned anything from this episode?

A: I'd love to say yes, I really would. Certainly there are lots of lessons available to us. But I don't think we've learned anything from this. We will still not do documentation properly. We will still modify systems instead of replacing them when they need to be replaced. We will still have a gap between the IT department and the business part of the world. One of the reasons we had Y2K in the first place is that IT was more concerned with technology than with the needs of the user.

Y2K is one of the biggest embarrassments of our profession. And I don't really believe we've learned anything from it. The proof of that is we've solved Y2K not by getting rid of the problem, but by postponing it and by using windowing instead. **[Editor's note:** *Windowing fools an application into thinking two-digit dates are four-digit dates.*] Windowing is a stopgap, and the excuses we gave were exactly, exactly the same excuses we used when we used the two-digit year in the first place.

Q: Will Y2K leave us with better-designed or at least better-documented systems?

A: No, absolutely not. In fact, I would guess that most organizations, if you asked them today how many different pivot dates do you use in your windowing scheme, where exactly are they and have you documented when they absolutely must be fixed, I think you will find that they would be unable to get you that information.

Q: So do you see any positive effect coming out of the Y2K exercise?

A: I think that what is going to happen is that there will be a better appreciation of how much we actually depend upon technology. And maybe, just maybe, management will realize we're not an overhead, we're not a cost center, we're actually an important part of the business.

I think certification is something that will arise out of Y2K. Specifically, within the next five years, unless you are certified as a project manager, for example, you will not be allowed by law to work on projects above a certain size, in the same way that a doctor cannot perform heart surgery without having that certification. ◗

Apple Shows Off New Client at Macworld

BY MARK HALL
SAN FRANCISCO

Steve Jobs, who has dropped the "interim" from his title as CEO of Apple Computer Inc., demonstrated publicly for the first time the client version of Mac OS X and new Internet tools before a packed and cheering auditorium here.

Jobs, clearly upbeat during his Macworld keynote address last week, despite a few failures during the demonstrations, showed the new user interface for the Macintosh that will begin shipping this summer. It will be preloaded on Macintoshes in January 2001.

The new products aren't directly targeted at Apple's business users, who are primarily in the publishing industry. However, John Swart, a consultant to The Associated Press in New York, said Apple's improved ease of use and its superior ColorSync technology, along with the Macintosh's entrenched position in publishing, should help it hold on to its share of the desktop market.

Jobs also announced that Apple has invested $200 million in Pasadena, Calif.-based EarthLink Network Inc. and will include it as the default Internet service provider preinstalled on Macintoshes beginning this year. He also said the company shipped 1.35 million Macintoshes in the last quarter, the most yet in any one quarter.

"Apple's resurgence will appeal to IT, but the Mac remains largely a graphics platform," said Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif.

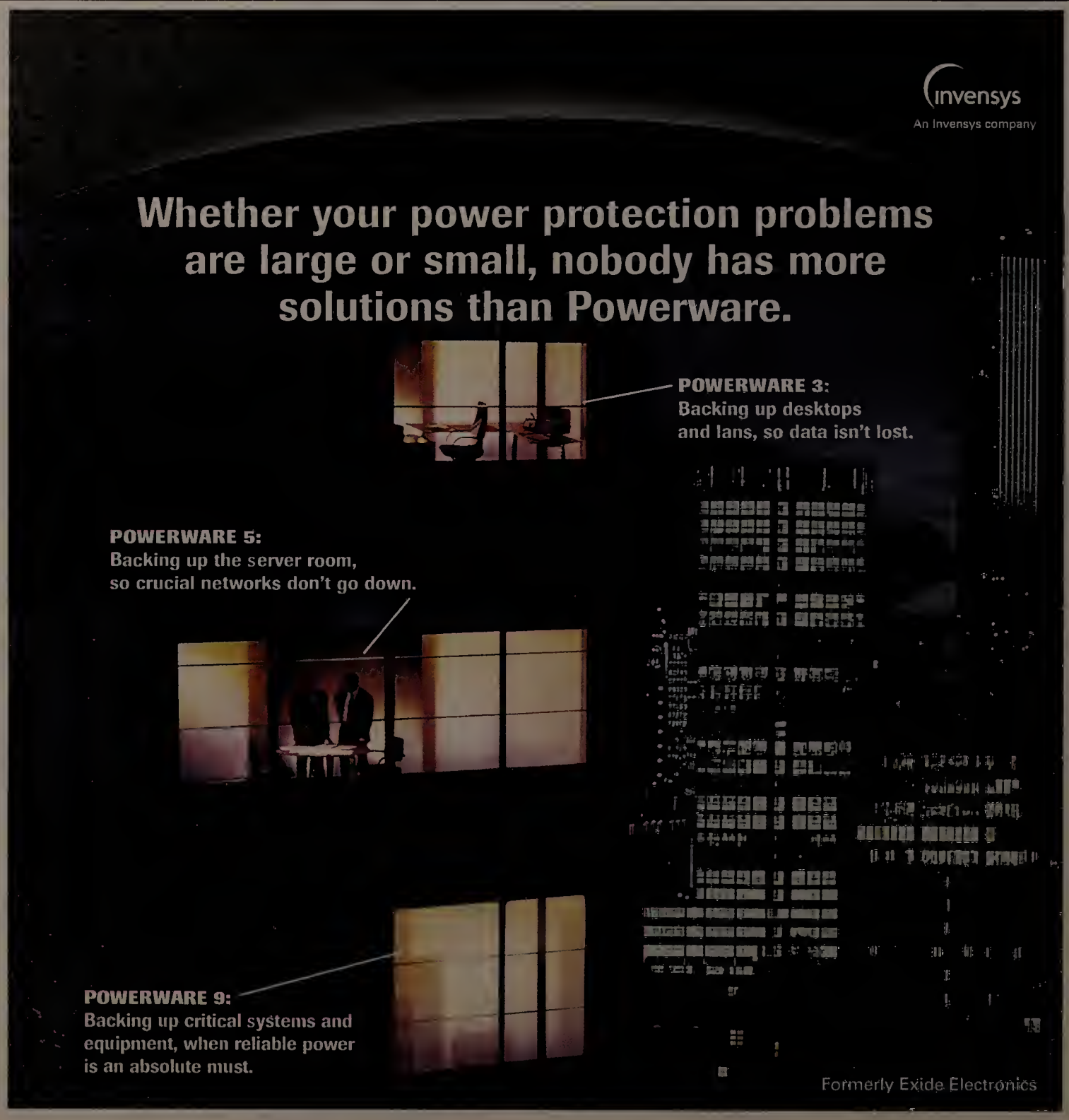
Paul Holzman, creative director at Eureka Studios, a San Francisco video production company, said he agreed. "Jobs is doing a good job focusing Apple on core products and a core vision," said Holzman, whose shop uses Macintoshes.

Software developers announced their allegiance to Apple and OS X at the show. Kevin Browne, acting general manager at Microsoft Corp., said, "We are fully behind Steve, and we'll be there for OS X."

Internet Tools Debut

Jobs also unveiled a series of consumer-oriented Internet tools designed to work with Macintosh server and client technology. Available as new services on Apple.com, iTools, iCard and iReview will, for example, include a database of acceptable sites for children. Instead of filtering out unwanted sites, as current protection software does, the database will include only permissible sites. It currently has 50,000 sites reviewed and approved by teachers and librarians.

The keynote had the feel of a rock concert, with Grateful Dead music playing and attendees lining up for hours before the event. First in line were three 16-year-old boys from Fargo, N.D., who arrived at 3 a.m. to get seats at the standing-room-only event. One said they came so early because "Mac rules and Windows sucks."



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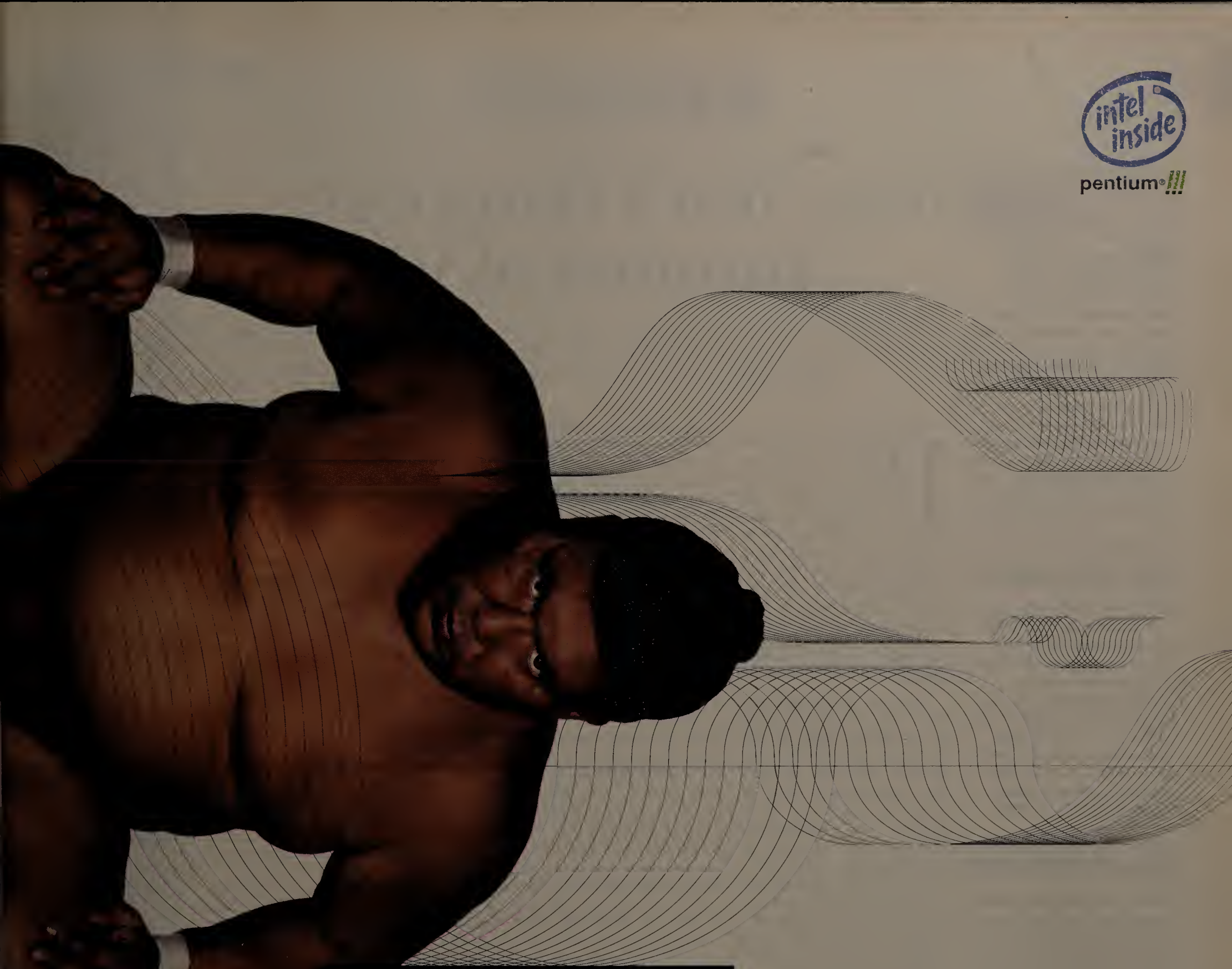
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IBM Supports Unix

IBM agreed to have its AIX Unix operating system run Web server, directory server and other Internet applications developed by Sun Microsystems Inc. and Netscape Communications Corp., even though the Sun/Netscape iPlanet suite competes with IBM's own WebSphere e-commerce products. IBM made the move to keep e-commerce users in its RS/6000 installed base, said Brad Day, an analyst at Giga Information Group Inc. in Norwell, Mass.

Qwest Wins Contract

Qwest Communications International Inc. in Denver won a $50 million contract to support the backbone network at the Department of Energy's Energy Sciences Network (ESnet). ESnet connects more than 30 research sites that focus on new energy sources, genetics, global climate change and other scientific issues. Under the contract, Qwest said it will provide performance levels up to 1T bit/sec. by 2005.

AOL in Handheld Deals

America Online Inc. announced two separate agreements for services that give wireless e-mail access to users of handheld computers from Compaq Computer Corp. and Tokyo-based Casio Computer Co. AOL said it's developing free software to allow subscribers to send and receive e-mail with Compaq's Aero and Casio's Cassiopeia devices. Last month, AOL acquired an online mapping service and a maker of text-entry software for mobile phones.

Short Takes

The Web-hosting services market is expected to almost double to more than $1.8 billion, according to INTERNATIONAL DATA CORP. in Framingham, Mass. . . . . PEOPLESOFT INC. in Pleasanton, Calif., closed its acquisition of VANTIVE CORP., a Santa Clara, Calif.-based vendor of customer relationship management software, for $560 million. . . . Open-source software vendor RED HAT INC. in Research Triangle Park, N.C., has bought privately held HELL'S KITCHEN SYSTEMS INC. in Pittsburgh, a maker of e-commerce payment processing software, for about $89 million.

New Year's Hangover: Fortunes of Vendors Vary

Service providers reposition after rollover; tool vendors have a tougher time

BY LEE COPELAND

PREDICTABLY, the market for tools and services to fix date fields died when the clock struck midnight Dec. 31, 1999. But as the new year rolled in, many systems integrators that had previously focused on Y2K watched their stock prices soar to new highs as they repositioned their services. Tool vendors, however, haven't been so lucky.

Cognizant Technology Solutions Corp. watched its stock hit an all-time high of $121 Christmas week, just after the Teaneck, N.J.-based services firm announced a suite of integration services to aid in building Web applications. The stock price remained in the mid-90s into the new year.

William Sutherland, an analyst at Janney Montgomery Scott LLC in Philadelphia, said integrators like Keane Inc. and Computer Horizons Corp. leveraged their year 2000 contacts to perform more projects within information technology organizations.

"They never counted on Y2K being a multiyear opportunity," he said. "They looked at it as a way to get a bigger customer list, then went in with e-business services and other projects. The successful companies thought of Y2K as a project cycle, just like [enterprise resource planning], which goes up and goes down."

Bouncing Back

Boston-based Keane and Mountain Lakes, N.J.-based Computer Horizons rebounded with the new year. Both companies are focusing heavily on Web-development integration services.

But unlike their services counterparts, Y2K tool vendors have had a tougher time repositioning their products for e-commerce.

Phoenix-based Viasoft Inc., a Y2K mainstay with its OnMark2000 compliance-checking tool, announced e-Business Studio 1.0, a tool suite for adapting legacy applications for the Web, early last month. Yet that barely affected its stock value, which fluctuated less than a point during December and is down from its year high of $8.82 in August. Income was down 26% in the quarter ended Sept. 30 from the same quarter a year earlier.

Slumping Tool Makers

The stock of Fremont, Calif.-based Y2K tool vendor Zitel Corp. also continues to slump, but it gained ground from its year low of 63 cents in November. The announcement of Linux support and a new Web monitoring tool offering in mid-December propelled the stock to trade at $6.25 per share.

Y2K tool vendors still have a shot at marketing their asset and inventory management tools to Internet-focused companies, industry analyst Norbert Kriebel at Giga Information Group Inc. in Cambridge, Mass., said. "Out of Y2K comes a new alternative for inventory management," he said.

"You would never start a company without a financial ledger, but in the past, we haven't focused on an IT ledger, something that examines the well-being of the IT portfolio," he said.

But Sutherland said he's doubtful that Y2K tools vendors can make a comeback. "I never bet on the license-fee side of Y2K because [those firms] don't have the same customer relationship in that business [as services firms]," he said.

Highs and Lows for 1999

Y2K SERVICE AND TOOL PROVIDERS

Keane Inc. (KEA)	Low: April 7	$17.25
	High: Jan. 11	$43.63
Cognizant Technology Solutions Corp. (CTSH)	Low: May 7	$19.25
	High: Dec. 22	$121
Computer Horizons Corp. (CHRZ)	Low: April 6	$9.25
	High: Jan. 12	$30
Viasoft Inc. (VIAS)	Low: April 8	$3.13
	High: Aug. 3	$8.82
Zitel Corp. (ZITL)	Low: Nov. 5	$0.63
	High: Dec. 10	$7

Compaq Buys Into Custom Configuration

Analysts divided on Inacom purchase

BY DOMINIQUE DECKMYN

Compaq Computer Corp. hopes its acquisition of Inacom Corp.'s custom configuration and order management capabilities will help it beef up its direct-sales drive. Some analysts said they're doubtful.

"What Compaq is doing is mixing and matching capabilities from two companies and trying to piece them together," said Roger Kay, a research director at International Data Corp. in Framingham, Mass. Dell Computer Corp., by contrast, grew its direct capabilities organically, said Kay.

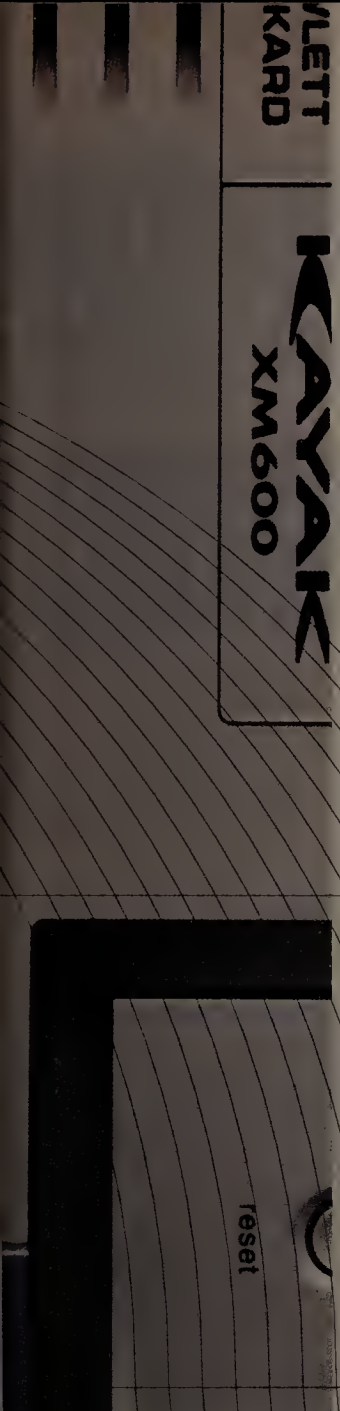
Eric Klein, an analyst at The Yankee Group in Boston, is more optimistic. "Compaq had a long-standing relationship with Inacom [so] I don't think it will take them long to piece this together," said Klein. He said he believes this move is an important step for Compaq toward catching up with Dell in the direct arena.

Compaq said last week it will pay $370 million in cash for the Inacom activities, which it will integrate into a wholly owned subsidiary under the direction of Mike Winkler, senior vice president and group general manager of commercial personal computing at Compaq.

In a conference call last week, Compaq President and CEO Michael Capellas said the deal would have its most immediate effect on the company's largest accounts, which prefer a direct relationship with the vendor. He said Compaq would maintain a strong relationship with channel partners and suggested that resellers would actually benefit because product supplies would be more predictable and inventories would be lower.

Compaq executives repeated earlier statements that the company intends to reach 40% direct sales in the U.S. by the end of this year.

The Inacom deal will allow Compaq to deliver more complex preconfigured systems than its biggest competitor, Dell, said Charles Smulders, an analyst at Gartner Group Inc.'s Dataquest in San Jose. However, "there's very little evidence in the industry that buying your reseller is a sound strategy," said Smulders, adding that the acquisition would likely upset other Compaq resellers.



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EXTENSIVE PLATFORM COVERAGE

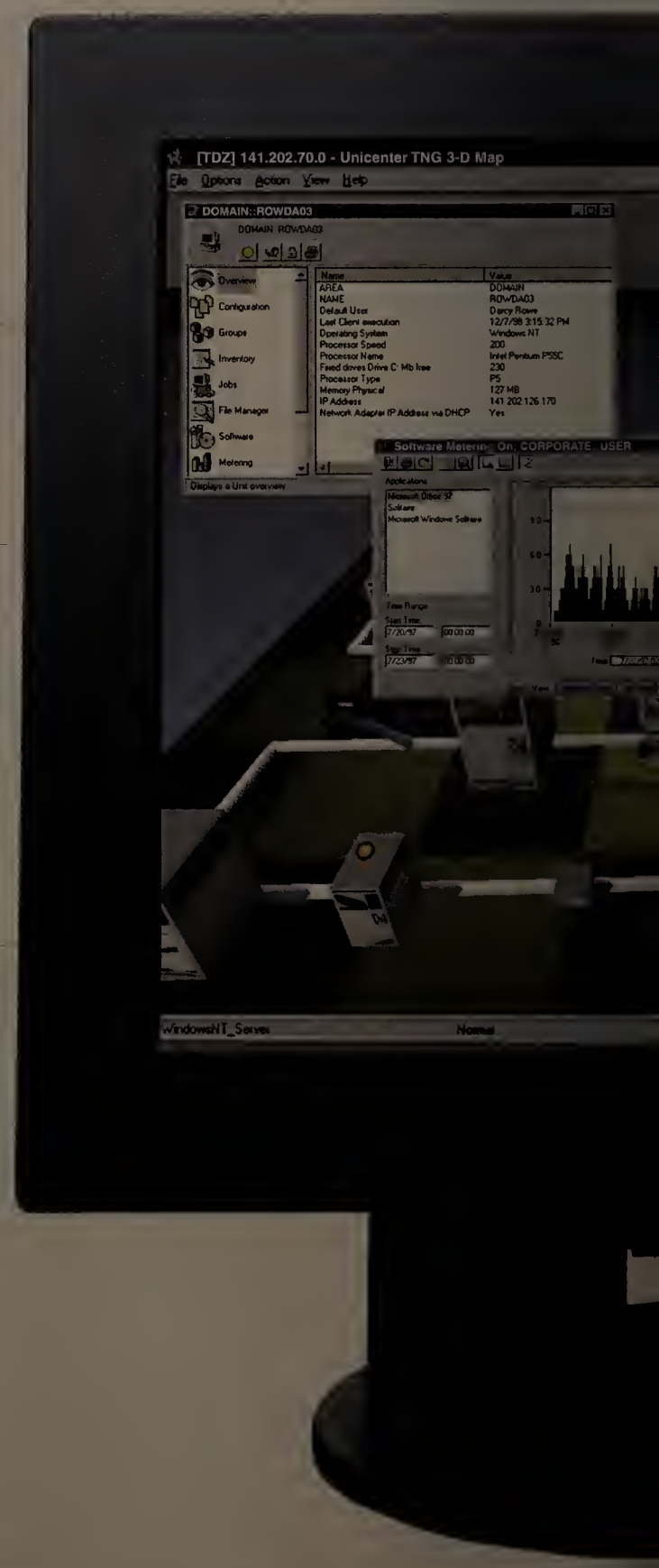
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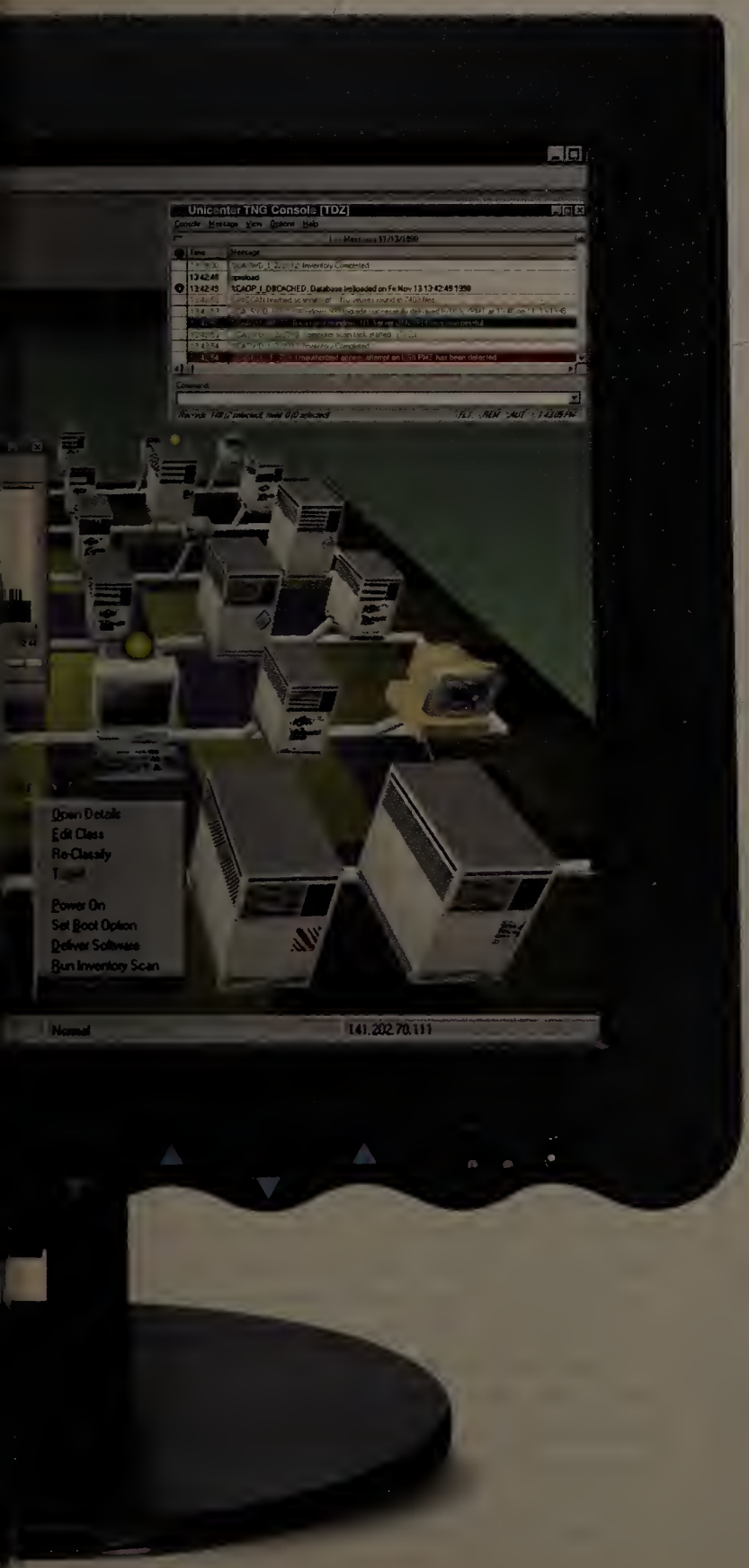
File-Transfer With Crash Recovery

Remote Access

REMOTE CONTROL

Integrated NT Security

Remote Reboot



Software Metering/Auditing

Software Maintenance

Software Inventory

Y2K Compliance Check

ASSET MANAGEMENT

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Financial Tracking

Policy-Based Management

Historic Analysis

Roaming Users Support

Hands-Free OS Installation

Broadcasting

SOFTWARE DISTRIBUTION

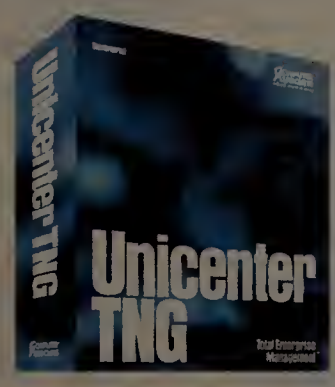
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MARYFRAN JOHNSON

Software shakedown

YOUR MARKET IS MATURE, your competition mostly gone, and new customers are hard to come by. So what better way to do business than to shake down your old customers? After all, they're trapped. You've got them wedged between the rock of their mainframe power needs and the hard place of your escalating software prices.



MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at **maryfran_johnson@computerworld.com.**

Welcome to the world of mainframe software vendors, which is dominated today by Computer Associates and Compuware but also includes veterans such as IBM, BMC Software, Candle and Sterling Software.

"If users had a choice, they'd throw the whole bunch of vendors out right now," one angry IT vice president at Nabisco told reporter Jaikumar Vijayan, whose Cover Story this week examines the dark side of enterprise software pricing. Another manager had to threaten a lawsuit to get his vendor to back away from an unjustified license fee increase.

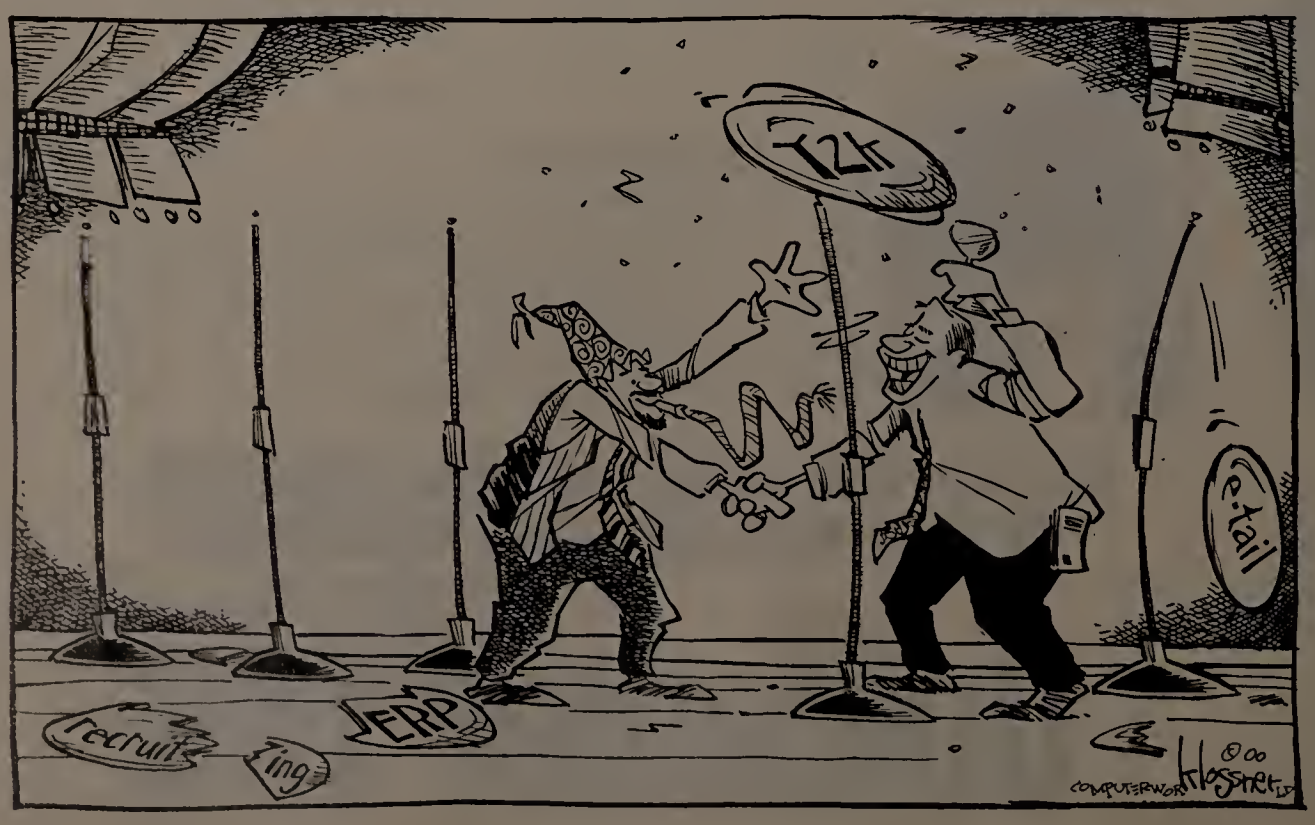
As mainframe hardware costs plummet ever lower — today's $2,270 per MIP has dropped from 1990's more than $100,000 per MIP — software costs are all too visible as they run endlessly upward. Adding newer, more powerful hardware can mean a substantive hike in licensing and maintenance fees, even though the software adds little corresponding increase in value.

"It's just hostage rates," said one disgusted data center manager.

Now, it's understandable enough that the software vendors would fight to preserve their profit margins. But to do so at the cost of customer goodwill is ultimately a dead-end business strategy. Some of the companies that sell both mainframe hardware and software — IBM, Hitachi and Amdahl, for example — have started offering alternatives, such as usage-based pricing to avoid alienating customers. How much more writing on the wall does the rest of the old guard need to see?

Stories like this one are gripping to read but tough to report, since users are often too worried about retaliation to name names, while vendors aren't inclined to comment on their pricing models in public. But you can help us out by speaking up. Let us know what your company is doing about runaway pricing and licensing concerns.

Start a shakedown of your own. ◗



DICK HUDSON

And now, a big, nationwide Y2K pat on the back

IN THE BROADWAY MUSICAL *My Fair Lady*, there's a scene where Col. Pickering and Professor Higgins launch into a self-congratulatory ditty called "We Did It." In it, they extol their success in converting a common flower girl into a duchess who, just that evening, was successfully introduced into London high society.

Well, gang, year 2000 is here and so are we. The sky didn't fall, mankind continued to pretty much function as it did on Dec. 31, and Y2K was pretty much a bore.



DICK HUDSON is CIO at Global Marine Inc. in Houston and a member of the *Computerworld* Advisory Council. Contact him at **Dick.Hudson@glm.com.**

We did it!

The Y2K conversion effort was the largest peacetime effort in U.S. history. Estimates by Gartner Group put the global cost as high as $600 billion to $1 trillion as millions of computer techies worked for years to do the impossible. That helped us eclipse the "man on the moon" project of the 1960s after President Kennedy said, "Americans will pay any price . . . bear any burden to put a man on the moon by the end of this decade." We did it in 1969.

In the 1990s, the IT industry paid the price in terms of dollars, hours, days, weeks and even years to ensure that the rollover on Jan. 1 was a noncataclysmic event, and we did it. Don't start pointing fingers at the doomsayers or call them idiots or fools. These people contributed by crystallizing the problem in such a fashion as to scare leaders of industry and government, and they caused lawyers to rub their hands with glee. In so doing, the financial resources and support that were crucial to our momentous success over the New Year were mobilized. Such support wouldn't have been possible otherwise.

When I was asked by the *Houston Chronicle* why this was a nonevent, I told the reporter that the brightest and best minds over the past 10 years had entered the IT arena, and they were the ones who fixed it. The end result of Y2K is that, unlike many other human endeavors, money and human capital were spent to see to it that *nothing* happened. Throughout history, these kinds of undertakings have produced significant changes in the course of mankind. As I, like many of you, sat in my data center for 19 hours on Friday, nothing

happened. This was a massive effort in avoidance. We did it!

Each and every one of you who reads this column should pause and reflect on your personal effort in what has transpired and, more important, how well you did it.

I doubt that any of us will ever again take part in a common effort of this magnitude. Don't gloss over your accomplishments or lose it in the rush of day-to-day living. This is a moment in history in which each of you was an integral player. So allow us to revel in a little self-congratulatory "We Did It!" ◗

MICHAEL COHN

On Webaholism and other high-tech addictions

WE DID IT TO OURSELVES. With our fancy cell phones, pagers, e-mail and Web sites, we have ruined what's left of our sorry lives.

We are a nation of workaholics. We are constantly wired in, working 24/7, unable to escape the lure of technology and the somewhat lousy paycheck that goes with it. We can't even enjoy a weekend. A movie. A marriage.

But sadly, workaholism isn't our only affliction. Technology has created several other debilitating high-tech addictions. As a public service, I have listed some of the most common below. But discretion is advised: The maladies listed below contain graphic descriptions. Consult with your physician if you have any of these symptoms.



MICHAEL COHN lives in Atlanta, where he is undergoing treatment for Twinkiholism.

The parkaholic. Practically at epidemic proportions. Parkaholics circle the office parking lot looking for absolutely the best, closest-to-the-door, highly coveted parking spot. Some mornings, they'll sacrifice 45 minutes to parkaholism in order to save six strides. I personally used to be so afflicted that I had several episodes where I arrived promptly at 8:20 a.m. but didn't quite make it into the building until someone from the first row left for lunch. My doctor now makes me telecommute.

The Webaholic. The No. 1 addiction in America. Every waking minute is spent on the Web, e-trading, e-shopping and eventually getting to your 117 unread e-mails because you were too busy e-trading and e-shopping. Yet even with this remarkable addiction, office productivity remains at an all-time high. How can anyone sleep at his desk when Yahoo is up 5 1/8?

The Postaholic. Can't help but steal, hoard or take home office supplies; his desk is full of them. He's got 30 sharpened pencils; an impressive stash of Post-it notepads, in three different colors; three staple removers; a lifetime supply of black binder clips; and six boxes of blank diskettes, with a couple of hundred extra of those sticky, colored diskette labels (because you never can tell when you'll need them). An isolated case of Postaholism is hardly a crisis, though two Postaholics in one office can cause some rather entertaining skirmishes around the supply closet.

The storaholic. Won't delete a file. Won't toss a printout. Physical and virtual space rapidly disappear as storaholics keep critical and not-so-critical documents from back when Carter was president. One of America's most expensive diseases, it accounts for up to 45% of next year's DASD budget. And just when you think you've got a storaholic cured, he suddenly relapses, running back to his cubicle to find that e-mail about restriping the parking deck from the summer of 1993.

The magaholic. Subscribes to every free trade rag and never has time to read any of them. Extremely susceptible to those irritating little subscription cards stuck behind pages 32, 54 and 78. Magaholics sign up for every free subscription known to man, and soon their cubicles are overflowing with such meaningful periodicals as *Small Midwestern Business Systems Application Integration Architecture Weekly* and *The Object-Oriented Journal for Left-Handers* — all still in their shrink-wrap.

The logoholic. Finally, this addiction results in frightening cravings for anything from a vendor: Calendars. Golf balls. Clocks. Paperweights. More paperweights. A typical symptom is having a bookcase, shelf or credenza covered with several hundred logoed mugs, and yet the victim still drinks coffee out of disposable styrofoam. Closely related to *vendaholism*, which is the incredible urge to get your HP rep to buy you lunch. ◗

READERS' LETTERS

Consultants shouldn't resent agency markup

I MUST take exception to some of Julekha Dash's points in "Web Plays Matchmaker for IT Temps" [News, Nov. 8].

While some contractors resent agencies "taking such a large chunk of change," it is my experience that this is due to many consultants' lack of understanding of the expenses involved in marketing, recruiting and training consultants as well as all of the back-end costs of billing, collecting and servicing clients in general.

Once reasonable people are shown what it takes to operate a quality consulting firm, they rarely resent the markup.

In an industry where 70% to 80% of every dollar received goes to consultant payroll and benefits, and the firms' pretax profits are under 10%, one has to wonder where any legitimate resentment may come from.

Donald L. McLaurin
CEO
National Association of Computer Consultant Businesses
Columbia, S.C.
don@naccb.org

'Ten Turning Points' contains unfair bias

I REALLY enjoyed David Moschella's "Ten Turning Points in the IT Industry's History" column in the Dec. 13 issue, but the biased language "IBM gets stuck with OS/2" implies that OS/2 was inferior to Windows. How can the antitrust trial affect the industry for the better if Windows' success is based strictly on its merits?

Lee Riemenschneider
Software engineer
Delphi Delco Electronics Systems

The boss deserves kudos, too

I COMPLETELY agree with the kudos being given out to Pinnacol Assurance CIO Rob Norris for both his honesty and his courage ["Turning Around the Project From Hell," Business, Nov. 22].

Let's not forget to give some to his boss as well for (hopefully) recognizing the inherent risks in all this wonderful technology and for not rewarding Rob and his staff by showing them the nearest exit.

Al Padeletti
Manager, desktop consulting services
University of Rochester
Rochester, N.Y.
pdlt@ats.rochester.edu

Inspiring programmer from an unlikely field

I HAD TO RESPOND after reading Kathleen Melymuka's Nov. 22 Ms. MIS column ("English *and* Calculus? You *Can* Have It All," Business].

The most gifted programmer I have ever met had an English history major. Phil Bolian, who then worked for IBM, actually created a Cobol compiler for a machine that had 16K bytes of RAM. He was the most inspiring programmer and innovator I have met in my computer business career. His innovation converted IBM's scientific small computer to a general-purpose machine.

This is a profile I have often noted: Forget the math, forget the science; there is something in some brains that clicks with silicon, and it ain't math or science. So I am delighted that my wife's alma mater partially recognizes this.

I would just go all the way and grab people with those great skills of writing, speaking and analytical thinking and encourage them to learn about IT. They will be killers.

Thank you for that wonderful column.

Sarwar A. Kashmeri
CEO and publisher
EbizChronicle.com
New York
Skashmeri@aol.com

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Include an address and phone number for immediate verification. Internet: letters@computerworld.com.

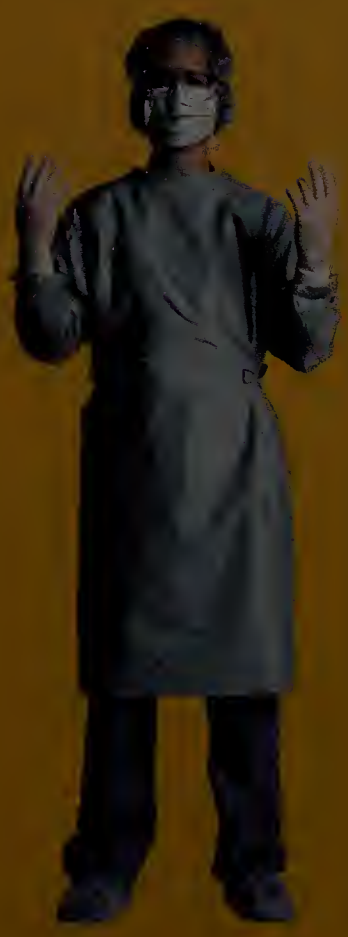
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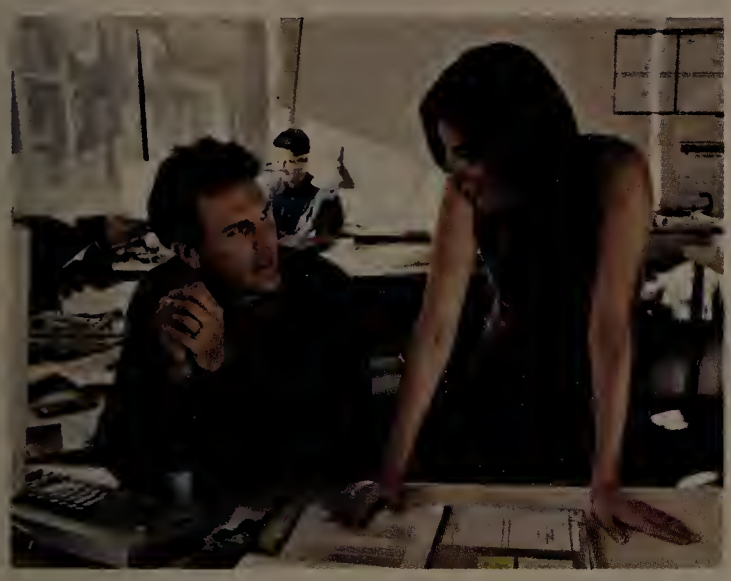


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ALEX TORRALBAS

A critical time for dot-coms, feds to don white hats

THIS PAST HOLIDAY season put the spotlight on e-commerce as never before. We'll see what the numbers tell us when the counting stops. One thing is certain: All of this business is taking place in a largely hacker-friendly, privacy-destroying, money-hemorrhaging tax haven.

As we wait for the results, let's consider some unpopular, maybe unspeakable, subjects.

We need Internet sales taxes. Nobody likes taxes. But most folks don't like potholes or ineffective 911 services, either. The fact is that local services are largely paid for by local sales taxes.



ALEX TORRALBAS is an IT consultant and independent programmer in New York. He can be reached at **alt@abac.com**.

While brick-and-mortar sales are hardly collapsing, consumer Internet sales are trending way up. As more business moves online, many towns and cities will start hurting as their sales tax revenue dwindles. Some Main Street shops will close altogether, unable to compete with loss-leader electronic retailers.

Some Web vendors say, "Collecting and tracking local sales taxes will put me out of business!" The free-market "can-do" types always moan they "can't do" when it suits them. They should stop whining and find a way to make money *and* play fair.

Could Amazon go belly up? What's going to happen to Wall Street and the economy if Amazon.com seeks bankruptcy protection? Can't happen, you say. Too capitalized. Too hot.

Sure it can. The biggest Internet brand hasn't been able to make a dime, no matter what it flogs. It's tried everything but the kitchen sink, and now even that's being offered for sale.

Why do we expect that Amazon will *ever* turn a profit? Investors and bankers won't keep saying yes to a value proposition like "Give me tons of money so I can run a perpetually unprofitable business and make my employees stock-option millionaires, and I'll give you stocks of questionable underlying value." If Christmas doesn't turn the corner for them, get out while you can.

We need government intervention. Soon after the birth of commercial aviation, there were heated debates in Congress over the creation of the Federal Aviation Administration. The airline industry and its lackeys in Congress argued that regulation would kill commercial aviation. What were they arguing over? *Safety* regulations.

Now we see Internet bazillionaires arguing that *any* involvement by the government will squash the Internet revolution. This is sheer nonsense.

The government isn't there to serve industry or business. It is there to represent *the people*. You know, us.

And right now we need it to protect us from being treated with utter contempt by snooping marketers. The recent fiasco at RealNetworks (it was discovered that RealJukebox sent information on the listening habits of users back to RealBigBrother) shows that self-policing (RealNetworks has the TrustE seal of approval) is toothless and empty.

We need privacy laws that are as stringent as the nondisclosure agreements corporations make us sign. The European Union has a great privacy law on the books. Copy it.

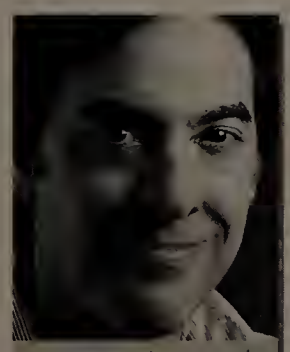
Let's also toughen the laws to protect us from privacy-invading hackers. Peeping Cyber-Toms now get lesser punishment than shoplifters.

We've always tried as a nation to keep a level playing field and protect our basic rights. In a perfect world, this would happen by itself. It's not a perfect world. Government isn't always the answer, but sometimes, it's the only answer. ◗

BILL LABERIS

One person's e-commerce horror show

PROVOKED BY A cavalcade of magazine cover stories touting unbridled e-commerce potential, executives are pushing with full force on IT to create their own companies' next Web wonders of the world.



BILL LABERIS is a consultant in Holliston, Mass., and former editor in chief of *Computerworld*. Contact him at **bill@laberis.com**.

If you're among the many who feel your boss is pushing too hard, maybe you can show him this column, designed to temper his enthusiasm with a dose of virtual reality. This lesson — where IT should be focusing most of its energy and where it shouldn't — is brought to you by the experiences of consumers and electronic retailers during the recent holiday buying binge.

Let me offer a personal experience to illustrate my main point, which is simply this: While your company is wending its way to e-commerce bliss, make sure that your systems support business basics in the virtual commerce world just as they do in conventional commerce.

Eager to spread holiday cheer, I turned to a leading company to please nine selected clients with food gifts. I placed nine different orders, all confirmed and shipped from the vendor in what should have been plenty of time for pre-Christmas delivery.

But six of the nine orders never made it to their destinations before Christmas. At no point after it turned the packages over to its shipper could the company track a single one, always claiming "part of our system is down."

Its customer service people were happy to blame their designated shipper. They assured me the goods I ordered could be enjoyed after the holidays, too, while conceding that the gift might lose some of its special impact if delivered in January. They even offered to return my money (as if I wasn't going to stop the Visa payment anyway) and, for my trouble, offered me 20% off a gift package I might like to buy for myself. I politely declined.

From published reports that came out within days after Christmas, it's clear my experience was similar to those of countless others with many other retailers. Goods were ordered online, delivery dates were promised, promises were broken.

One could conclude that there were delivery problems, lots of them, but mainly *just* delivery problems. But that would be wrong and misleading in my case.

The company that botched my orders failed with basic customer service. Five times, starting with the placement of my orders, I requested a fax of the orders for my records. Five times I was told that internal systems were backed up and the fax would go out within 72 hours. As of this writing, no fax.

And why was I constantly calling the company to check on my orders when it should have been chasing down information and e-mailing it to me? I won't shop there again, which is the same comment I read over and over again in recent published reports as consumers recounted their online shopping woes.

Putting up a decent Web site with a workable front-end order entry system is relatively easy, maybe too easy. That's like having a nice storefront window display. But that system must be tightly integrated with all other aspects of the business, including delivery and customer service, *before* the system is deployed. That's all IT dirty work, including ERP, supplier relationship management and so on. It's also the core of e-commerce competence.

Those are the areas where IT needs to concentrate its greatest efforts. They are inherently unsexy and unglamorous, certainly from the point of view of senior executives.

And they are the most expensive aspects of an e-commerce system. These aspects — the IT plumbing — are also the most difficult for executives to fathom and appreciate. Just remind them and show them that there are serious consequences to rushing into e-commerce beyond the ability of the underlying core systems to sustain it. ◗



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BUSINESS E-COMMERCE

Business-to-business e-commerce will reach $2.8 trillion by 2003, according to a recent study. A second study confirms this growth, saying electronic procurement — buying supplies and equipment electronically — is a key part of companies' business plans. ▸ 39

BRANDING

Shell was spending tens of thousands of extra dollars on advertising because of branding inconsistencies. To remedy the problem, Shell created a one-brand corporate initiative centered on an extranet. ▸ 41

'00 PREDICTIONS

Free Internet access, devices and software will be commonplace by the end of the first quarter, predicts International Data Corp.'s Senior Vice President Frank Gens. Other predictions: Internet stock corrections and the death of pure-play dot-coms. ▸ 44

E-COMMERCE

Filling orders was somewhat of a problem this holiday season, but online shopping revenue still surged 300%. Most of the delays came at companies that focused only on Web site development and didn't look at inventory issues or hire enough people in warehouses, not package delivery problems. ▸ 45

NEW OFFICE

When Sun Microsystems decided to open an office in Burlington, Mass., there were concerns about traffic. Sun made sure to address highway concerns and agreed to pay $6 million in first five years, with the majority of the money going to local schools. ▸ 54

WOULD YOU HIRE HIM?

Are job fair recruiters any good? Yep. *Computerworld*'s Steve Ulfelder went undercover as a job-hopping Oracle database administrator job applicant with a résumé full of misspellings. He found nobody was quite desperate enough to hire him. ▸ 56

CYCLE TIME

The Internet is helping to shrink cycle time, the amount of time it takes to complete a process such as delivering a product to market. Online response gathering is faster and cheaper than other methods. See QuickStudy. ▸ 58

CONTRACT TALKS

During contract talks, it's imperative to keep corporate changes in mind, says Joe Auer. Companies often overlook clauses that severely limit usage rights. Dealing with this after the fact results in added costs and little negotiating power. ▸ 59

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EBAY'S CEO

Twenty months into her job as CEO of eBay Inc., Meg Whitman has gotten her arms around the company. Lacking technical skills, Whitman has learned them on the job, particularly last summer, when eBay looked like it might go under from the weight of increasing user demand. But thanks to her business savvy, Whitman has taken eBay to new Web heights.

48

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What do you need most?

Shell Protects Brand via Net

Global system used to guard image standards

BY MATT HAMBLEN

TWO YEARS AGO, oil giant Shell started seeing inconsistencies in how its valued seashell logo and other images were being used in different advertising promotions and Web sites around the world.

In some instances, Shell field offices had stopped using the 10-pound books that spelled out the rules for presenting the brand. Instead, field workers created their own manuals to work with local advertising agencies. The result: Consistency was sacrificed while each new project typically added tens of thousands of dollars in new costs, Shell officials said.



SHELL'S WEB-BASED SYSTEM distributes thousands of brand standards that can easily be updated, says Simon Saville

In response, Shell's global standards group last summer created a "One Brand" corporate initiative. The effort centers on a Web-based system that distributes thousands of brand standards that can easily be updated and customized by marketing staffers and advertising agencies, according to Simon Saville, Shell's London-based global brand standards manager.

Saville's group publishes images, templates, tools and usage guidelines on an intranet and an extranet Web site that is accessible by Shell marketing personnel and some of its biggest design agencies.

Shell chose Promptu Corp., a San Jose-based developer of marketing-centered extranets, to host and support the extranet. Analysts described Promptu as part of a small but growing group of Internet integrators that specialize in building extranets for use with partners in a new realm called partner relationship management. The field has grown in the past year, as larger companies see the need to buy a packaged application or service to help them manage extranets with partners.

"What Promptu does is very significant because you can change your brand or other marketing materials and get it out instantly with minimum effort worldwide," said Bob Thompson, founder of Front Line Solutions, a consultancy in Burlingame, Calif.

Prior to its One Brand launch, Shell was spending $250,000 annually to produce its printed branding manuals. Promptu's fee for hosting and supporting the extranet is less than half that amount, Saville said. Promptu provides its eMarketing system as either a subscription service, starting at $12,000 per month for software, hardware and technical support, or as a license, which typically costs $150,000 for the first application.

But cost savings are only part of the benefits Shell is getting out of using the extranet. For instance, it's faster and easier for Shell to manage and alter its logo and brands via the extranet, Saville said. Workers in Shell's advertising departments can more easily handle the details of creating print advertisements, such as selecting the correct print size for billboards and newspaper ads or determining how the logo needs to be positioned. Also, the extranet has instructions for the proper way to post information to more than 40 public Web sites.

The online branding standards "are a great job aid for me," said Eydie Pengelly, manager of marketing communications at Shell Chemicals in Houston. Pengelly works with design companies that can access the brand standards via Shell's password-protected extranet to get the precise specifications for promotional materials.

For example, a Shell engineer who needed to make a PowerPoint presentation was directed to the site for an image of the Pecten (shell) that was created by Shell specifications. The online standards will also allow Shell Chemicals to standardize materials such as stationery with other divisions, so there is a clear message that all the divisions are part of a whole, Pengelly said.

A $5 Billion Name

"The more clarity you bring to the brand, the more you help the customer decide," said Saville. The Shell oil products brand is valued at $5 billion, according to written statements from Shell.

Pengelly and other field marketing staffers at Shell plan to eventually use the Promptu system to create customized packages of information that can be e-mailed to customers, dealers or smaller design agencies that don't have access to the extranet, Saville said.

Saville said it's difficult to place a value on the Promptu service, but he said it has "definitely helped our business." It has saved thousands of dollars because local designers no longer have to start anew with their own designs, he said. And telecommuters who work for Shell or its design partners worldwide can no longer argue that they don't have access to design standards.

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Electronic Procurement Catching on Among Businesses

BY JULIA KING

Business-to-business e-commerce will reach a whopping $2.8 trillion by 2003, according to a new study by The Boston Consulting Group (BCG).

That figure includes transactions via traditional electronic data interchange (EDI) networks, which BCG analysts said won't disappear. Instead, they will grow at a rate of less than 10%, while new Internet-based transactions will soar at a rate of 80% to 90%, the study predicts.

In 1998, by comparison, U.S. business-to-business e-commerce exchanges totaled $671 billion. Of that, $92 billion in transactions were handled over the Internet; the rest were handled via EDI, according to BCG.



CIO JOHN HALUSKA: XML will be used for newer or more urgent types of transactions

BCG's latest growth projections are based on in-depth interviews with 200 purchasing managers and business-to-business intermediaries.

Analysts and users agreed that most companies will "surround" rather than replace their existing EDI systems because EDI remains valuable for the high level of standardized product and transaction information it affords supply-chain partners.

"We view EDI and the Internet as all one electronic-commerce marketplace," said David Pecaut, an analyst at BCG.

John Haluska, CIO at Thomas & Betts Corp., a $2 billion electrical parts company in Memphis, agreed. He said he expects companies to continue to use EDI for traditional transactions such as order confirmations and to use Extensible Markup Language (XML) for newer, more urgent types of transactions such as immediate online purchases.

Just last September, companies in the $65 billion electrical parts industry affirmed their commitment to EDI in e-commerce with the launch of a one-of-a-kind frame-relay extranet over which trading partners can exchange critical inventory ordering information [News, June 7]. Using new translation software, this data, which is sent in EDI format, can be easily converted to an XML format, Haluska said.

A second survey, recently conducted by Deloitte Consulting in Wilton, Conn., also projects a huge surge in business-to-business e-commerce, with procurement driving a good part of the increase.

Electronic procurement — buying supplies and equipment electronically — is a key part of nine out of 10 companies' business plans, according to the survey, which polled procurement managers at 200 global corporations.

Of the 200, about 30% had already implemented the hardware, software and networks needed to buy and sell everything from pencils and paper clips for internal use to raw materials for manufacturing finished goods.

In both studies, analysts found that dramatic returns on investment are behind the jump in business-to-business e-commerce.

"E-procurement removes a lot of people from the transaction chain," said David Roddy, chief economist at Deloitte Consulting. "Right now, there's still plenty of room for creating efficiency by doing things over the Internet in the business-to-business marketplace."

But moving purchasing online takes more than adding new hardware and software. It also requires setting policies and following new workflows, which in the world of manual purchasing are often unknown or not enforced.

Fragmentation of suppliers and buyers is another stumbling block. Companies often lack an overall picture of their total spending with a given supplier. Consequently, they can't take advantage of the discounts available under corporate purchasing contracts.

Pharmaceutical firm Abbott Laboratories in Chicago, for example, spends about $4 billion per year on purchasing and has 250 purchasing agents and managers at 17 locations in the U.S., plus 17 more international sites.

"Lots of information is in agents' heads, in files, in drawers and in PCs," said Steve Hansen, the company's manager of corporate purchasing systems. At a recent conference, Hansen presented an overview of Abbott's in-progress electronic-procurement project, which includes a Web-based purchasing information portal that gives all buying agents a single view of the company's standing with its suppliers.

Prior to making this information centrally available, Abbott agents in some instances were paying as much as $2,000 to $3,000 more for the same parts. Now, after 18 months in operation, the company's new purchasing information network has saved Abbott about $9 million — "just by sharing information," Hansen said.

Key Findings of Electronic Procurement Survey

- 30% of companies have implemented electronic procurement
- Average investment is $2 million to $4 million
- Average return on investment is 300%
- 70% of suppliers are prepared to collaborate with users' electronic procurement strategies

Base: 200 global corporations

SOURCE: DELOITTE CONSULTING, WILTON, CONN.

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Growth Seen in Free Net Access This Year

BY DAVID LEGARD

Internet stock corrections, the death of pure-play dot-coms and an explosion of free Internet access services are the main predictions for 2000 made by International Data Corp. (IDC) Senior Vice President Frank Gens in the market research company's Fifth Annual Predictions report, published at the end of last year.

There will be a broad correction in Internet stock prices, consolidation in key e-commerce segments and a trend toward profitability among dot-coms, Gens predicted. Free Internet access, devices and software will be commonplace by the end of this quarter, he said.

Gens also predicted the demise of companies that exist solely on the Web. Customers live in the real world as much as in the virtual one, which will force pure-play Internet firms to step up their bricks-and-mortar presence, he said.

Smart companies will put networks to work in their business models, radically expanding their electronic channels and becoming channels for others, according to Gens. Indirect channels will make a comeback, with growth in online shopping engines, virtual malls, digital marketplaces and affiliate marketing, he said.

Even Dell Computer Corp. head Michael Dell, the poster child for direct marketing on the Net, will embrace the new breed of electronic channels, according to Gens.

Market Moves

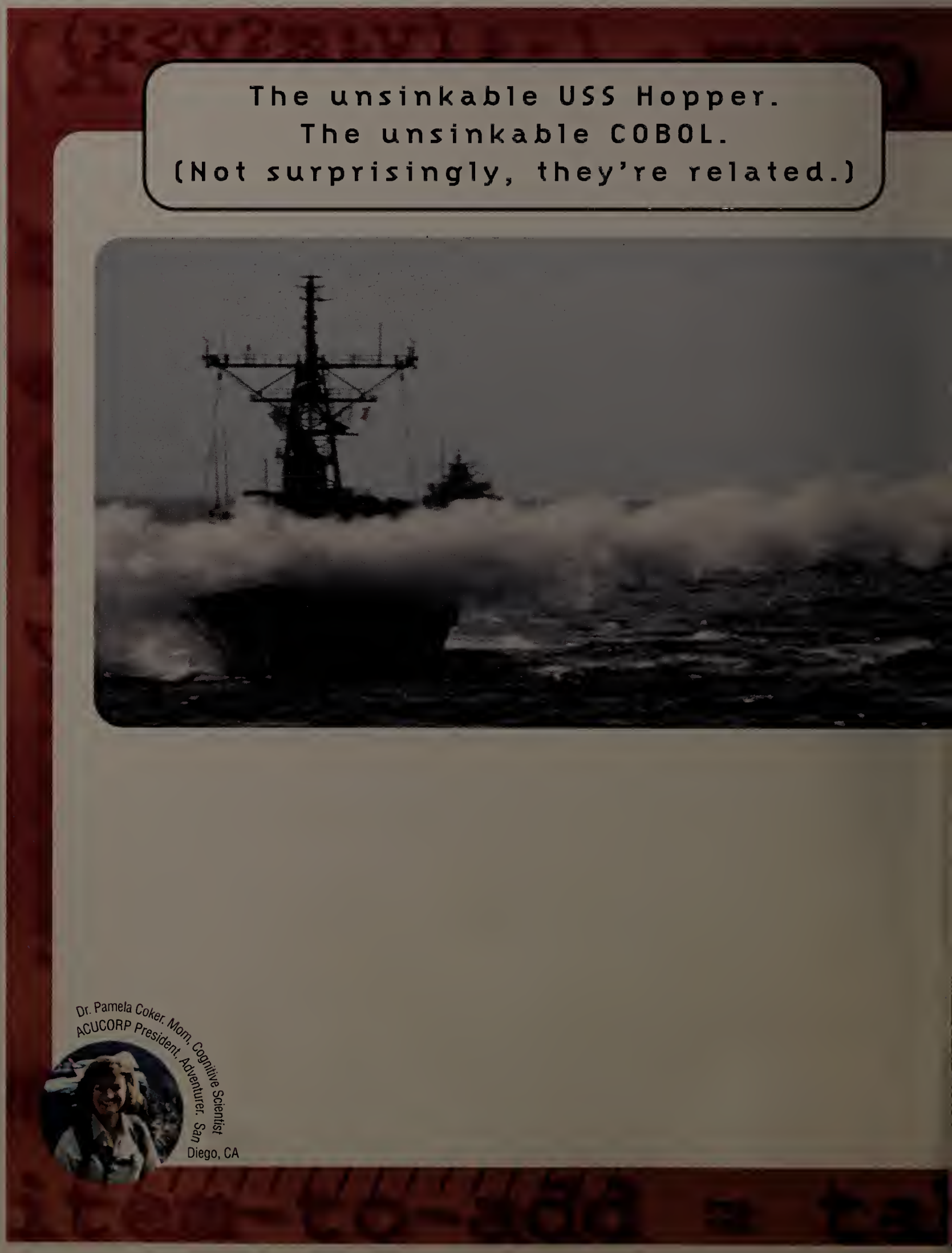
In the area of technology developments, Gens' predictions included the following:

- Broadband will account for more than one in 10 online households in the U.S. by the end of this year — about 2.5 times the number in 1999.
- Of U.S. households with two or more PCs, 38% will also have a home LAN.
- Electronic wallets for wired consumers will reach critical mass just in time for the holiday season.

Gens also offered a grab bag of miscellaneous predictions, including the following:

- Microsoft Corp. will be broken up, either by itself or by the U.S. Department of Justice, in the wake of the antitrust trial against the software giant.
- Still more U.S. presidential candidates will seek credit for the Internet and e-commerce boom, despite the flak Vice President Al Gore received over his Net claims last year. Unfortunately, according to Gens, the candidates will do so by proposing new legislation and regulation.
- Celebrity CEOs will jump to dot-com companies. Wealthy middle-aged CEOs will be looking for new challenges in running Internet start-ups.
- Many Fortune 1,000 companies will still struggle getting their online initiatives to work.

Legard writes for the IDG News Service in Singapore.



Experience Helps: E-Shopping Rises 270%

BY AMY MALLOY

Problems caused by a reported 270% surge in online purchases during this past holiday shopping season came mostly at electronic retailers whose Web sites — but not warehouses — were ready.

There were some fulfillment problems. "A lot of retailers did invest in infrastructure and Web processing," said Donna Iucolano, chairwoman of the Committee on Internet Shopping at Shop.org, a trade association of online retailers. The problems were largely on the order-fulfillment side, Iucolano said.

Toys R Us Inc., for example, was unable to fulfill some orders, but it offered $100 in store gift certificates to make up for problems.

Most of the delays were at companies that focused only on site development and didn't look at inventory issues or hire enough people in their warehouses and weren't the fault of package delivery companies, according to Susan Rosenberg, a spokeswoman for United Parcel Service of America Inc. She said the company experienced no major problems, even though its online tracking requests reached an all-time high of 3 million on Tuesday, Dec. 21.

UPS was prepared for the volume because it spent much of the summer running forecasting models with catalog and electronic retailers, Rosenberg said.

Mark Saunders, a spokesman for the U.S. Postal Service in Washington, said the Postal Service saw use of its Priority Mail service increase about 8% compared with the same time last year. He attributed a lot of the growth to the Internet, but the Postal Service doesn't have numbers to prove that.

To prepare for the increase in mail, the Postal Service hired 40,000 seasonal workers, expanded office hours, rented an extra 1 million square feet of facility space, contracted for thousands of extra trucks and, in many cities, delivered packages on Sundays.

"Those [retailers] who had been in the market a year or better were better prepared than last year," said Iucolano.

Shop.org and The Boston Consulting Group polled 30 retailers during November and December. The study projected that total e-commerce sales for 1999 would be between $38 billion and $40 billion, compared with 1998 sales of $14.9 billion. The study projected that online revenue not related to financial services during the holiday season would total between $10 billion and $11 billion, compared with approximately $3 billion to $3.5 billion the previous holiday season.

The size of the average online order was up 8% over the same period a year earlier. The researchers reported success across all product categories, with apparel sales particularly brisk, but they had no specific breakouts.



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Consulting Career Guides

BY ALAN R. EARLS

The SAP Consultant Handbook: Your Sourcebook to Lasting Success in an SAP Consulting Career

By Jon Reed and Michael Doane; Pine Hill Press, Freeman, S.D., 1999; paperback (The book isn't currently available in bookstores. It can be ordered through Sapsource.com or Amazon.com.)

Did you ever hear the joke that SAP stands for "suitcase and passport?" That's a not-too-subtle reference to the peripatetic lifestyle demanded by SAP consulting. Applied to this slim, passionate and information-packed book, SAP might equally stand for smart, authoritative and persuasive. One author of *The SAP Consultant Handbook* is an experienced SAP recruiter. The other is an SAP consultant and author of three previous books.

Reed and Doane repeatedly stress that SAP can be a path to terrific money. But if you jump on this gravy train, forget a personal life. If SAP is what you want, they discuss in detail what it takes to succeed. For example, they note that changing policies at SAP AG itself — and changing market conditions — may lead to more variability in demand for SAP skills.

Indeed, what makes this book especially valuable is that it focuses on how SAP implementations are changing — the great wave of enterprise resource planning implementations at Fortune 1,000-class firms has crested. Now the emphasis is on incremental improvements, reaching down the supply chain and finding ways to make SAP the star of the middle market.

How to Be a Successful Computer Consultant

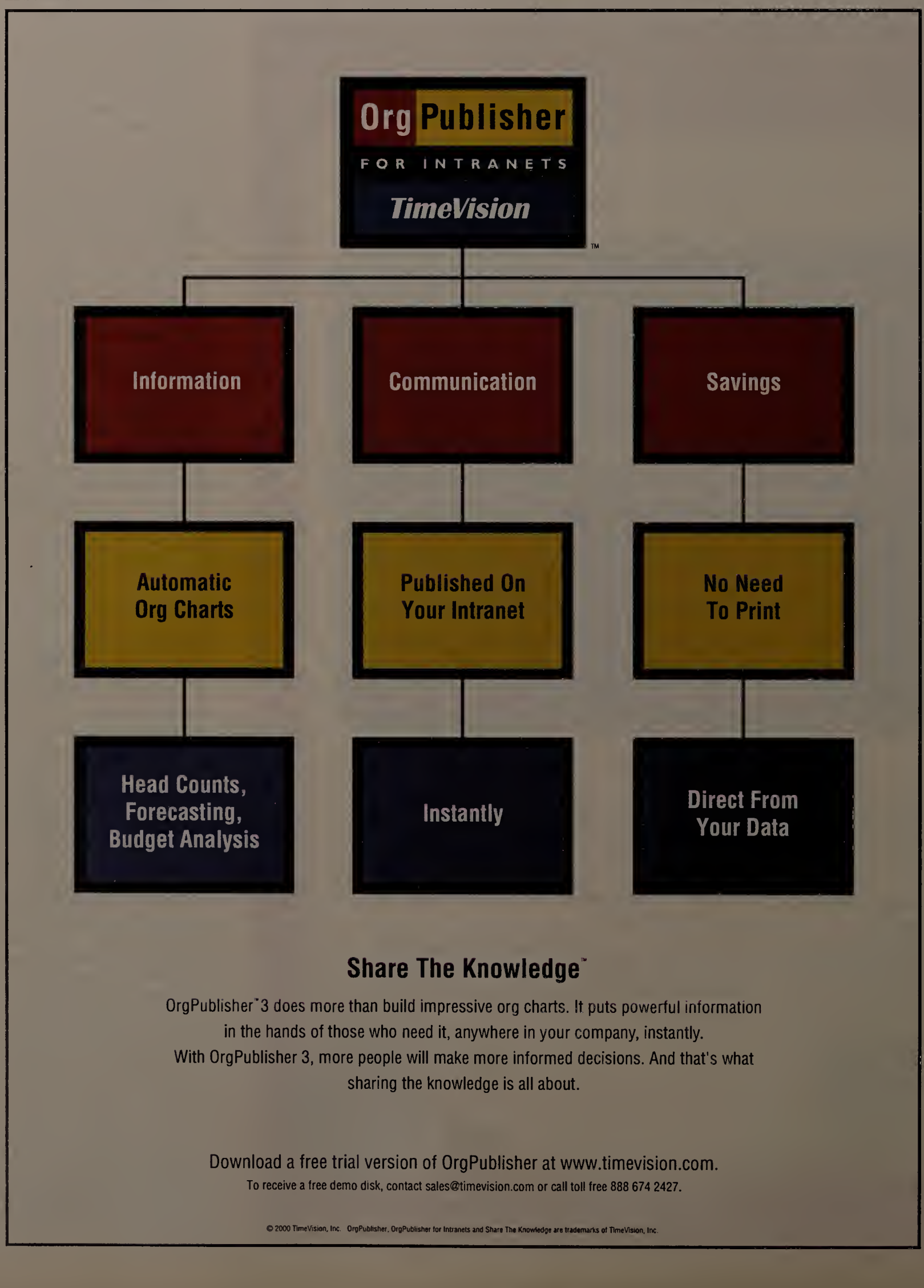
By Alan R. Simon and Walid Mougayar, The McGraw-Hill Cos., New York, 1998; 348 pages; $21.95, paperback

Now in its fourth edition, Alan Simon's *How to be a Successful Computer Consultant*, while still useful, is getting a bit long in the tooth.

This edition blends material for independent consultants with several new chapters about how to succeed in corporate consulting settings, how to thoroughly define the boundaries of a new consulting engagement and how to deal with difficult client situations. This new material clearly applies to all consultants, whether they're independent or working for a consulting firm. However, this book's weak points remain its long-windedness and tendency to drift from its mission.

While Simon talks up the still-rosy opportunities in VAX/VMS consulting and building PC/LAN networks, the market has sailed on over the horizon. To be sure, *How to Be a Successful Computer Consultant* has plenty of time-honored truths, but it's simply not millennium-ready.

Earls is a freelance writer in Franklin, Mass.



WORKSTYLES

What It's Like to Work at . . . Panasonic

Interviewee: Tom Popp, project manager, Web applications
Company: Panasonic Co.
Location: Secaucus, N.J.
Number of IT employees: 200 to 250 total; 40 in the Web applications group
Number of employees (end users): 15,000 end users among a total of more than 23,000 sales, service and manufacturing employees in North America
Dress code: "As a company, we have formal business attire, with casual Fridays. But IT is in two separate buildings – our headquarters and a new prototype facility with about 100 people, including my group. The new facility was designed to be more appealing to programmers and allow them to be more creative. And here, it's casual every day."
Workday: "We have a standard 9-to-5 workday, with some around-the-clock systems support in eight-hour shifts. If we're in a development or launch phase, those hours may get extended. But in IT, burnout can be high, so we try to make the environment conducive to brainstorming and enable people to match their work to what stage of a project they're in."
Key projects in the Web applications group:
■ E-commerce initiative: "We just launched the Panasonic online store in November. It sells select products only, like electronic accessories and computer peripherals."
■ Enhancing the dealer extranet: "The business-to-business audience is key for us, so we're looking to let them do everything, from updating their information in our dealer locator to accessing their order information.
■ Enhancing the intranet: "We're working on a customer assistance directory that can be used internally – and to some extent externally."
What kind of career paths are available? "A lot of the Web staff has moved here from other functional areas within Panasonic, because our group is new. I came from corporate communications; we have a former legal secretary, traditional Cobol and C programmers and a former video editor."
What kind of in-house training have you had within the past year? "A week-long team-building seminar, SAP seminars and technology luncheons where we brown-bag it and go over hot technologies."
Kind of offices: "In the new building we have quads – cubes that allow four to six developers to each have their own personal space, with tables in the center so they can collaborate."
What do you see on people's desks? "A lot of books, actually, because we are constantly reading programming language guides and other computer books. But, as developers, we're also an energetic group, so one quad has a Charlie Brown hanging from the ceiling; another has a hackey-sack ball. People put their own little touches on their area."
Percentage of staff that telecommutes on a given day: "It's based on need. We don't have any in my group because of the amount of [internal] customer interaction."
In-house cafeteria/food service: Yes, at both facilities.
Rating (scale of 1 to 10, with 10 the best): "For the convenience and cost, it would be an 8. At headquarters, the company subsidizes it, so it's even better."
Free refreshments: "In our location, coffee, hot chocolate, etc. We all chip in for a bagel club on Fridays."
One thing everyone complains about: "Commuting. We're right outside of New York."
Where the office gossips: "Anywhere."
Favorite topics: "The Web group is always talking about new technologies they saw and how we could try it. We have a lot of gamers . . . and sometimes developers bring in guitars."
Last companywide/departmental perk: "When we launched the company store, we had a ceremony in the company cafeteria. And afterward, all the participants on the team went out for dinner."
Quote: "Both as a corporation and in this group, in particular, there's opportunity to be creative and really enforce our belief that customer satisfaction is a priority."

– Leslie Goff

PAUL A. STRASSMANN

The Y2K 'ransom'

THE U.S., IN MY OWN ESTIMATION, spent more than $300 billion to secure a smooth computer transition into 2000. My numbers are based on comparisons between Y2K fix-it costs that public corporations filed with the Securities and Exchange Commission and each firm's administrative and sales expenses. With financial data about such expenses available for 7,600 public corporations, you can come up with a more reliable approximation of Y2K costs than what you'll read or hear from consultants and government officials.

The question is whether that $300 billion-plus was a successful investment. Or, rather, was it money thrown at a problem under the hysterical conditions that one usually finds when paying ransom to rescue a kidnap victim?

The answer is important. Executives are now concerned with rationalizing their Y2K programs as prudent decisions. Shareholders will also soon ask what other large payments are looming ahead to obtain catastrophe-free computer services that their enterprises will need in order to function.

And the potential credibility of all computer executives could be at risk.

I consider the Y2K tab a monumental failure. It demonstrates how the leadership of our information-based society couldn't cope economically with computer-based risks. There's no such thing as a perfectly functioning, completely reliable computer system, and there never will be, especially as the complexity and interconnectivity of networked systems permeate everything. Of all the inherent risks that I can list, I rank the omission of two calendar digits among the least deadly. The issue is, what have we learned so that we can deal with the dangers that are yet to emerge, such as the perils from cyberterrorism and information warfare?

The question is whether that $300 billion-plus was a successful investment.



Our society knows how to cope with inherent risks that arise from technological progress. Steam boilers explode, trains derail, oil tankers spill their cargo, cars collide, buildings collapse and airplanes crash. Since hardly anyone can absorb what may appear to be a rare but huge loss, commerce has insurance.

The payment of an insurance premium allows businesses to share risks and submit to the judgment of expert risk assessors to come up with rational gambles about plausible hazards. In turn, the risk underwriters do their best to impose on society public standards, codes and tests that would minimize their own monetary losses.

In terms of dollar exposure, Y2K was initially believed to be riskier and more expensive than earthquakes or tornadoes. What, then, was the response from our executives?

Instead of following the proven pattern of reliance on codes, standards, tests, competitively priced premiums and cost/benefit analyses, management abandoned sound decision-making and chose to protect each firm as if it were a stand-alone fortress that had to depend on its own error-prone crews to achieve unprecedented levels of reliability.

Whipped into a spending frenzy by doomsday consultants, self-serving vendors and blame-dodging politicians, each organization went ahead with a program of trying to attain a zero-risk status against unpredictable "bugs." As any actuary would tell you, the price of achieving risk-free perfection against every conceivable and unknown danger is a huge multiple of what it would cost to insure against specific perils. It's the difference between the pooled costs of the risks from Y2K compared with each organization's payment of "protection money" for its own safety that is my measure of Y2K's excess costs.

If one assumes that Y2K was something like an insurable earthquake you could come up with the calculation that the U.S. recklessly overspent by about $150 billion by not pooling risks. Instead, every firm ended up self-insuring against every conceivable failure that may arise from a faulty calendar calculation. This proves to me that corporate executives didn't place any trust on the spreading of the risks by means of insurance premiums. I estimate that the penalty for pursuing such an approach was equal to at least one-third of the 1998 profits for public U.S. corporations.

I predict that this loss will come to haunt the credibility of all computer executives whenever they try to make a new case for spending that won't yield more profits.

Strassmann (paul@strassmann.com) says he believes that the Y2K experience is not a good example of how to cope with the risks of a computer-based society.

CEO Meg Whitman powers eBay on instinct and experience and gains an education in technology

By Kathleen Melymuka

"THIS IS IN TROUBLE. You'd better get down here. The guys aren't moving fast enough."

The call was from eBay Inc. CEO Meg Whitman to her new president of eBay Technologies, Maynard Webb. Not only had Whitman spotted impending trouble while monitoring the operations center, she had diagnosed it. "She said, 'That's a hardware issue. This is what you'll see, and this is how long it will take.' " Webb recalls. "And she was right."

Whitman brings new meaning to the concept of a hands-on CEO. She literally lived in the information technology operations center through much of last summer after a catastrophic 22-hour outage in June convinced her she was battling for San Jose-based eBay's life. "We put in cots, and I was just there," she says. "I lived it."

The massive outage, hard on the heels of a flurry of shorter crashes that year, was a trial by fire for Whitman. Her IT department had been unable to keep up with the company's phenomenal growth and was already stretched to the breaking point, the volatile and vocal eBay community was screaming bloody murder, and the stock price was plummeting.

Whitman's credentials were among the best American education and business could offer, but her technical savvy was that of a casual user. All she had was instinct, but it had to be enough. "Without technology, we don't *have* a company," she explains. "It was very clear that I had to step in and provide the leadership to get us through this."

Whitman came out of the experience a technically astute CEO with a visceral understanding of what technology means to the company. "I am a far better executive than I was," she says, "and I have a deep understanding of the technology challenges and what the options are."

EBay came out of the summer with a beefed-up IT department, a strong new IT executive in Webb (formerly CIO at San Diego-based Gateway Inc.) and a commitment to build the kind of e-commerce system that the world has literally never seen.

Whitman grew up on New York's Long Island and topped off an economics degree from Princeton University with an MBA from Harvard. Following that were stints as brand manager at Procter & Gamble Co.; consultant at Boston-based Bain & Co.; marketing executive at The Walt Disney Co.; division president at The Stride Rite Corp. in Lexington, Mass.; CEO of FTD Corp., the flower delivery service in Downers Grove, Ill.; and general manager at Pawtucket, R.I.-based Hasbro Inc.'s preschool division, from which she was lured to eBay in May 1998.

What makes an up-and-coming executive with a blue-chip business background take a leap of faith to a funky online auction specializing in rummage-sale treasures like Pez dispensers and Beanie Babies? "It was funny," she says. "Sometimes in life you just have an instinct about things."

Whitman says her instinct told her the Internet was going to change everything and that something was going on with the trading community coalescing around eBay that gave it a leg up on other businesses. "Meg really 'got' eBay intuitively," says Bob Kagle, a partner at Benchmark Capital in Menlo Park, Calif., whose early investment in eBay yielded the best return in the history of venture capital.

Whitman saw eBay as a perfect Internet company because it did something unique that couldn't be done without the Internet. "There's no substitute in the land-based world for eBay," she says. "I just had an overwhelming instinct that this thing was going to be huge."

But nobody realized how huge. Forrester Research Inc. in Cambridge, Mass., and Prudential Securities Inc. in New York estimate that the consumer-to-con-

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sumer and small-business-to-consumer online auction market will reach $4.8 billion in gross merchandise sales this year and $41.6 billion by 2003. EBay's cut averages 6% of gross sales, and The Motley Fool Inc., a financial information company in Alexandria, Va., estimates that eBay owns 88% of the market.

As one of the few dot-com companies to have made a profit almost from the beginning, eBay is a Wall Street favorite, and analysts are comfortable with Whitman's instincts. "She's done a remarkable job," says Rakesh Sood at Goldman, Sachs & Co. in New York. "She's taken to it like a fish to water."

Internet Speed

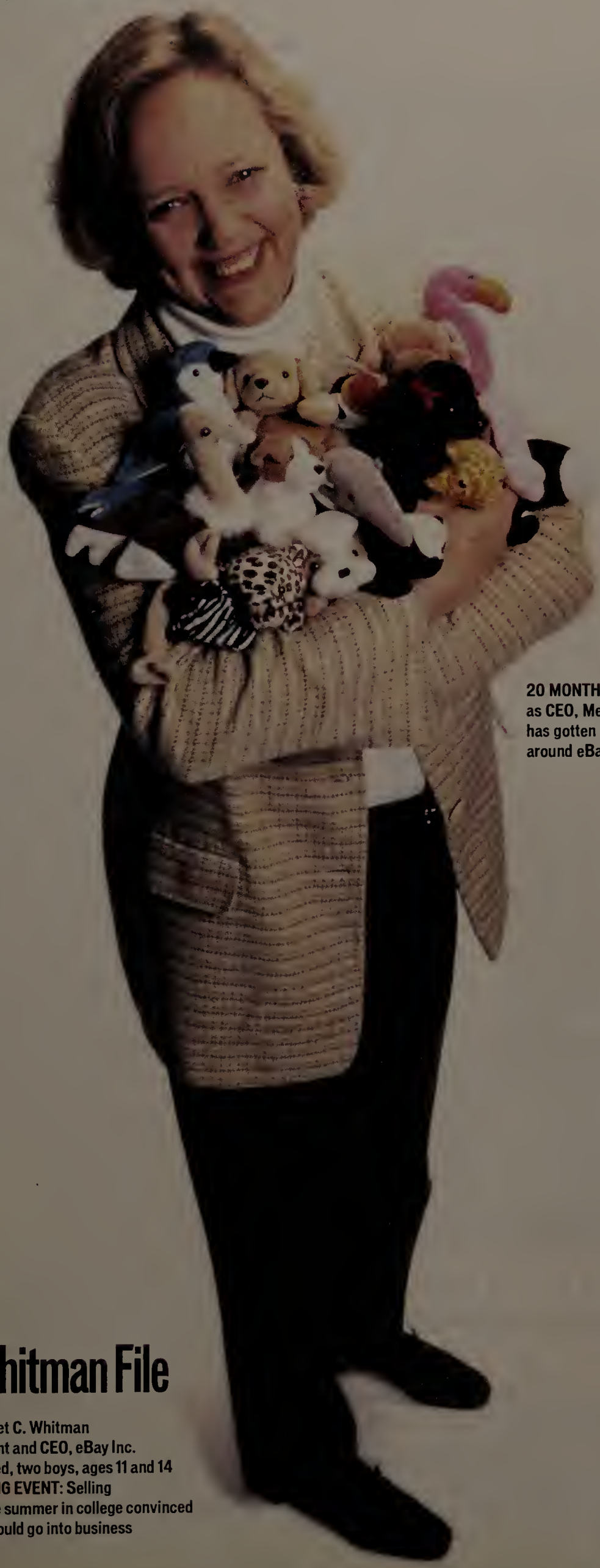
Whitman's willingness to trust her instincts may be the key to her success in the frantic world of the Internet. "In this space, the price of inaction is higher than the price of making a mistake," she says. She reckons that she makes 20 decisions a day that would occur over a two- or three-month period at another company. For example, in the second quarter of last year alone, eBay acquired Butterfield & Butterfield Auctioneers Corp. in San Francisco; Kruse International, an Auburn, Ind., firm dealing in collectible autos; Alando.de AG, Europe's largest online auction; and Billpoint Inc., a Redwood City, Calif., company enabling person-to-person credit-card transactions.

Because things move so fast at eBay, her experience counts, Whitman says, particularly since most of the staff are twentysomething Web kids. "There's no shortage of energy, brilliance, drive, but they just don't know because they haven't done it before," she says. Yet, *she* has. "There have been many times

Continued on page 50

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20 MONTHS into the job as CEO, Meg Whitman has gotten her arms around eBay

The Whitman File

NAME: Margaret C. Whitman
TITLE: President and CEO, eBay Inc.
FAMILY: Married, two boys, ages 11 and 14
LIFE-CHANGING EVENT: Selling advertising one summer in college convinced her that she should go into business

Internet Intuition

Continued from page 49

when I've said, 'I know what's going to happen here,' because I've seen it unfold before."

But no one foresaw the June 22 crash, even though it was eventually attributed to an operating system bug that Sun Microsystems Inc. had previously alerted eBay about but that eBay hadn't yet fixed. Clearly, seat-of-the-pants technology management was no longer adequate for eBay's mission.

No wonder. The site had been growing a minimum of 30% to 40% each quarter. It serves up to 90 million interactive bidding pages a day. It has the transactional volume of Charles Schwab & Co. in San Francisco, but unlike Schwab, it lacks a back-end legacy system painstakingly developed over years. And unlike Schwab, eBay virtually never closes.

Whitman acknowledges that she made a costly error by waiting too long to hire key senior managers, especially Webb. But in June, she had to play catch-up, imposing stringent discipline and conducting top-level technical diplomacy to dig eBay out of the technology hole it was in. "This was about putting very specific procedures and processes in place and marshalling Sun, Oracle Corp. and Veritas Software Corp. and really figuring out how we were going to get quickly to far more redundancy and recoverability than we had," she explains.

Whitman's learning curve was steep. "I remember for the first few meetings I really didn't understand what people were saying," she says. But that didn't last long. "It's sort of like learning French," she laughs. "If you immerse yourself, after a week you can actually speak French."

Again, instinct played heavily. "I can just tell the way people are talking about something that it's not right," she says. "They don't even know it's not right, but I know."

Once Whitman had the lingo down, she was able to coax options out of her technical staff and vendors, then build consensus about what to do. Not that there's a simple way out of eBay's technical difficulties. "We are absolutely pioneering a technical infrastructure that does not exist," Whitman states.

The need to build in nearly infinite scalability is keeping Webb busy. "We've got this Ferrari screaming down the highway and I'm kind of standing on the hood, throwing asphalt down in front of it as we go," he says. EBay's Ferrari raced to great complexity in record time, he says. "Last year at this time, we had no E10Ks [Sun's largest servers]. Today I have seven. It gives you an idea of the dynamics of growth."

Webb's strategy is to split up eBay's huge, maxed-out database into more manageable, distributed chunks. Functions such as customer feedback, accounting and some product categories will be moved to separate machines. This will provide vastly more room for growth and less catastrophic consequences when one server goes down. But the cost is a lot more management complexity — and a lot more discipline. And imposing traditional management discipline is difficult in a freewheeling dot-com environment where "folks, in many cases, have never done any of that before and don't want to," Webb says.

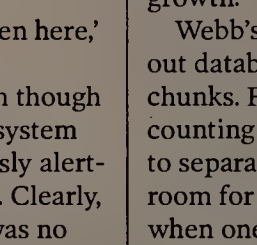
His other concern is reliability. Shortly after another spate of outages in November, Webb moved eBay from a "warm backup" system — in which a copy of the database resides on another machine and operations can be switched over — to a high-availability cluster, where live data and the backup copy share a disk. Theoretically, this will cut recovery time from hours to minutes in most cases. Webb is also working toward better early warnings of impending crashes.

Into the Future

Whitman's focus on eBay's technology problems has won her praise. "She has done a remarkable job of addressing it head-on," Sood says.

She also gets high marks for keeping eBay on task. "People tend to get very, very enamored of other areas the company could participate in," Sood says. "She's made sure the company continues to maintain its focus on core competencies."

For example, Whitman recently shut the door on speculation that eBay would move into the lucrative business-to-business auction space, but that didn't preclude a strategic, $22 million investment in Tradeout.com, an Ardsley, N.Y.-based business-to-business auction start-up on whose board Whitman will serve. "I want to be in a position to understand what's happening in b-to-b because it's a very adjacent space," she says.

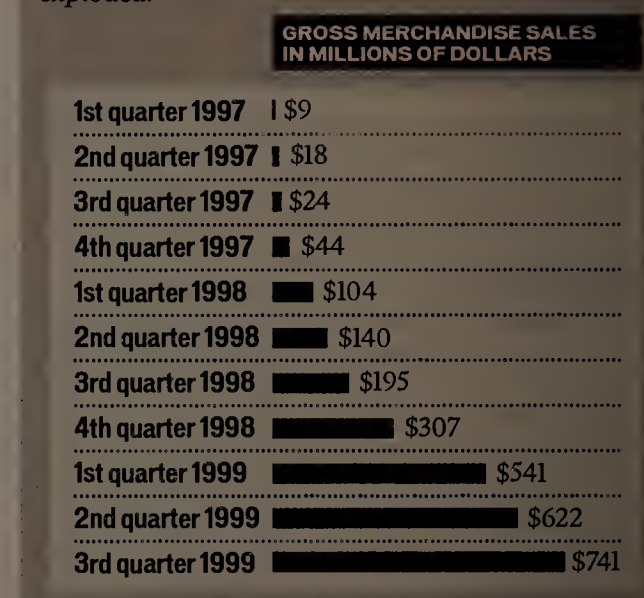


I remember for the first few meetings I really didn't understand what people were saying. It's sort of like learning French. If you immerse yourself, after a week you can actually speak French.

MEG WHITMAN,
PRESIDENT AND CEO, EBAY

The Rise of eBay

In less than three years, eBay's business has exploded.



EBay in Third Quarter 1999

Users: 7.7 million
Items listed: 36.2 million
Gross merchandise sales: $741 million
Unique visitors per day: 1.4 million
Listings added per day: 300,000

SOURCE: EBAY INC., SAN JOSE

Looking ahead, Whitman is setting up regional auctions, which allow people to trade goods that can't be shipped easily, such as cars. "If we're successful, it's a dead-on attack on the classifieds," she says. She's also expanding eBay internationally, going after the midtier auction business and enabling buyers to use credit cards for person-to-person sales.

Eyeing the Competition

Meanwhile, Whitman is keeping her eyes on the competition, which includes such powerhouses as Amazon.com Inc. in Seattle, Yahoo Inc. in Santa Clara, Calif., and Microsoft Corp. But she says eBay's blend of community and commerce will keep it ahead. Keeping the eBay trading community intact and loyal is perhaps the biggest long-term challenge, and that's anything but assured, says Philip Anderson, an associate professor who teaches Internet strategy at the Tuck School of Business at Dartmouth College in Hanover, N.H. The rise of "auction-bots" — online agents that can search across sites — may render loyalty and eBay's brand advantage moot, he says. He suggests that instead of depending on customer loyalty, Whitman should be adding value that will differentiate eBay from other sites. "They're sitting on terabytes of data about what sells, what doesn't, how prices move up and down," he explains. By mining that data and providing consulting services to sellers and buyers, eBay could offer a service no one else could match.

"But pioneers have the hardest time figuring out that the wind is changing," he notes. "It's easy to fix mistakes but terribly difficult to change what made you a success."

Anderson maintains that Whitman's willingness to reinvent eBay will determine whether she's a good CEO or a great one. "Jack Welch did it, and Bill Gates did it," he says. "Is Meg Whitman a leader of that caliber? She hasn't proved it yet."

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Overcoming Fears of New IT Neighbors

Working with local and state officials can make moving easier, Sun learned in 1996

BY CHRISTINE WILLARD

HIGH-TECH firms are the hot economic news of the millennium. But having a new headquarters move into your hometown isn't all good news. Overloading an aging infrastructure and increasing traffic congestion can raise local tempers. When Sun Microsystems Inc. decided to open an office in Burlington, Mass., in 1996, local residents went into high negotiation mode to make the pluses balance the minuses.

Sun's experience can serve as a lesson to other companies moving a large workforce to a new community. By providing lots of information to residents and local officials, demonstrating a willingness to work for solutions and adding cash and company services as needed, Sun worked through the process to move its East Coast headquarters to Burlington.

Only 15 miles from Boston and close to the airport, the location was convenient for European clients and provided an East Coast presence for the Silicon Valley company.

Sun started at the top. Sun CEO Scott McNealy conferred with Massachusetts' governor at the time, William Weld. The state's Office of Business Development got involved. Massachusetts was eager to attract businesses, having watched its textile and manufacturing industries decline in the early 1990s. The high-tech industries that now inspire the state to bill itself "the e-commonwealth" haven't offset that loss.

Despite the open invitation, setting up such a large shop obviously wasn't easy. Nor was relocating or recruiting an instant mega-staff. Eventually, more than three dozen government boards and agencies were involved in helping Sun move in.

Sun's real estate experts chose an abandoned, contaminated industrial site once occupied by RCA and owned in 1996 by Lockheed Martin Corp., which had occupied only 20 of the site's 158 acres and had moved out completely in 1991. Lockheed Martin was eager to sell, cleaning up the contamination to the satisfaction of state environmental officials as a condition of the sale.

Sun sent representatives to introduce the company to residents at town meetings. Despite early worries about the impact on traffic, housing prices and large-scale recruiting, the initial town government reception was positive. George Judge, chairman of the Burlington Board of Selectmen, presided over an accelerated approval process that took less than a year because it provided parallel rather than sequential negotiations and approvals from local boards.

Solving expected traffic problems raised local tempers. To ease them, an abandoned road on Sun's property was given to the town and paved with the help of $1.5 million from a public works emergency development grant. But residents vehemently opposed an extension across an adjacent field that would have sent traffic through a residential neighborhood.

"We felt it allowed more traffic and encouraged development," said resident Christine Monaco, who spoke out against that plan. It eventually won narrow approval, but the construction won't be completed for another year and a half or longer. Local residents hope promises made by officials who have since retired will be kept.

The town and Sun also agreed to a mutual give-and-take. Sun gets early tax incentives, and the town gets substantial technology-related donations or other benefits.

A so-called economic target area was extended a few hundred feet from its original boundaries to include the Sun site. This means local officials can negotiate taxes, providing lower rates in the early years, when Sun's capital investment costs are high, and increasing to full taxation over a period of 20 years.

In addition, Sun agreed to pay $6 million over the first five years, with $4.3 million to $4.6 million going directly to local schools and the rest to highway and infrastructure improvements.

The windfall for schools has already resulted in 23 completed projects, including a technologically revamped middle school. Before, the buildings weren't even capable of handling the electrical capacity that computers required, said Arthur Fallon, coordinator of computer and media services for Burlington schools. Projects had to start with wiring upgrades before the computers and monitors in every classroom could be added.

And finally, making your IT staff available to the community can go a long way toward improving community relations, Sun learned. The schools were wired for the Internet by Sun employees as part of Net Day activities. Sun's Community Action Volunteer Program encourages employee participation.

"We use these occasions for team building, as well as good will," said Cathy Welsh, Sun's vice president of human resources. "It's part of our retention program." ◗

Willard is a freelance writer in Los Osos, Calif.



TIM GRAY

BURLINGTON'S PUBLIC SCHOOL technology coordinator, Arthur Fallon, looks on as Sun representative Beverley Bryant works on a PC in one of the school computer labs funded by Sun

LESSONS LEARNED

Easing the Moving Process

- Start a dialogue and discussion with state and local officials early in the process to identify all the key parties and their roles and responsibilities.
- Introduce local company officials early in the process to state and local officials with whom they will be working. Be personal. Talk to everyone. Sun gave local officials hard hats and bused them to the site.
- Take time to explain your company's background, products and services. Inform local officials about the company's grants, donations and other community-driven events. Put a human face on the company.
- Sun provided models of the proposed site development at town meetings. "We took advantage of every opportunity to tell them about us," says Beverley Bryant, site manager for corporate affairs. She went to Burlington frequently during the winter of 1996-97, eventually spending a couple of weeks there preparing for the town meeting in May 1997, when Sun's proposal received unanimous approval.

TIMETABLE: In 1996, Sun Microsystems decided to build an East Coast headquarters to tie its facilities together and create an East Coast presence. The Burlington, Mass., site was fully entitled and engineered and had been vacant for years. Local and state leaders helped Sun finance improvements to the infrastructure that would help the community cope with a major industrial installation. Through a deal that negotiated tax structure, Sun provided an initial $6 million in its first five years in the community, earmarked for infrastructure and schools. Sun's 1,847 employees on the Burlington campus pursue research and development in its Java, Jini, Solaris, SPARC, SunStorEdge Family, SunSpectrum, Ultra and Sun Enterprise Workgroup Servers in the 550,000-square-foot facility. Sun plans to expand that to 1.3 million square feet to house 4,000 employees.

AT A GLANCE

Sun Microsystems

www.sun.com

Market: Hardware, software, services and Internet development tools

Employees: 29,669 worldwide

1998 revenue: $9.79 billion

But What About Me?

In the event your company is pondering the big step of moving the whole operation, what's the good news and the bad news for you, the IT worker? Consider the following:

Gather information. Find out what's involved – the where and when. What new facilities and systems will you move to? What will happen to your group?

Participate. Join a committee or volunteer for the intranet news site. You may not be able to influence decisions that have been made at other levels, but you'll hear more detail and nuance about what's coming down.

Decide. How does the move fit into your career plan? What about personal considerations, like moving your family or the impact on your spouse's career?

Follow through. If you're on board, you can use advance planning to snag a desirable cube or get trained on the new systems. If it's time for an exit plan, your preparation will make it a smooth transition.

– Christine Willard



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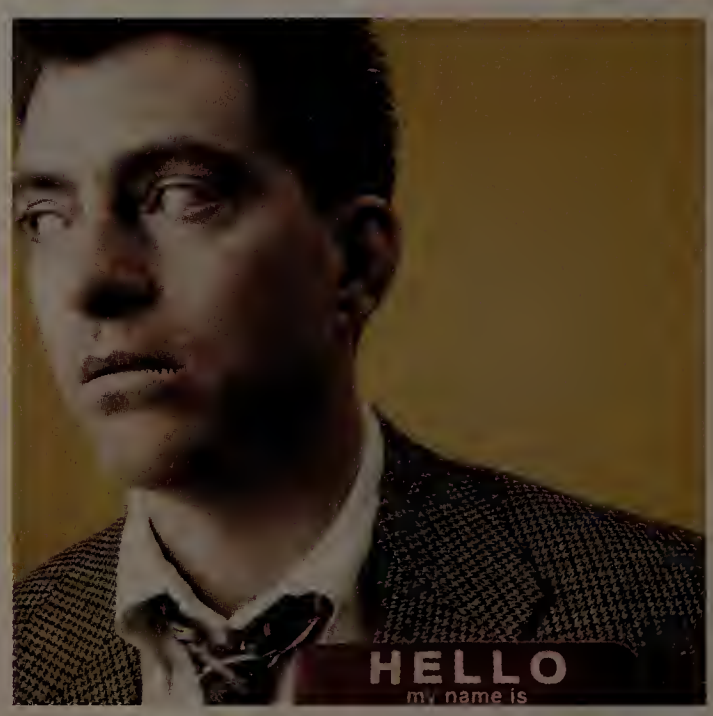
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LARRY VOLK



SO, WHEN DO I START

JOB FAIR RECRUITERS – are they any good? Apparently so, our own Steve Ulfelder learned. He went undercover as an Oracle database administrator job applicant, and found that nobody was quite desperate enough to hire him

STEVE MAGNER looks around the ballroom. He's the worst-dressed guy in the joint. Under a grudging necktie, his top shirt button is open. His blazer would get him tossed out of a used-car salesmen's convention. His beat-up cargo pants puddle on his beat-up bucks.

Magner looks at the hiring companies' banners. Where to start? Allied-Signal? Geico? Raytheon? Whatever. He slouches off to hand out résumés.

Steve Magner is actually me in disguise. Not that it was too much of a stretch to dress like a slob.

Computerworld recently got to wondering about information technology job fairs. In the Internet age, do they count for much?

Some say they add valuable face-to-face time for both prospect and hiring company. Others scoff and say they're mere cattle calls, staffed by human resources people who can't possibly evaluate candidates' IT skills. Job seekers' résumés, these critics say, simply wind up in the to-be-scanned pile. We couldn't find any IT workers who seemed especially fond of job fairs.

Still, according to a recent *Computerworld* survey, 10% of all IT workers are hired through recruiting events. That's way behind the leading tool — employee referrals, at 25% — but it's fourth on the list, ahead of search agencies (8%) and paid Internet recruiting services (also 8%). People *use* these fairs.

There are, of course, different kinds of IT recruiting events. You've got your campus fairs, where students are

glad-handed and rushed just as they were during Greek Week. And you've got your single-company fairs, where Conglomerate.com opens its doors seeking everything from mail room staff to line-of-business executives.

But we were curious about classic, multicompany fairs put on by outfits such as Westech ExpoCorp and Kaplan Career Services. These companies are the leaders in the run-what-you-brung IT fairs that pop up at hotels all over the country.

Hence the birth of Steve Magner. Who is, not to put too fine a point on it, kind of a loser. No doubt a disappointment to his family. Can't hold a job. Can't write his way out of a paper bag. Couldn't even be bothered to spell-check his résumé.

He does have one thing going for him: He's an Oracle database administrator with a couple years' experience. These days, an Oracle database administrator — *any* database administrator — is worth his weight in gold, right? Steve Magner set out to find just how much of a creep an Oracle database administrator could be and still get real interview offers.

That's why Magner is at a Kaplan career fair, in a ballroom, in a place called Martin's Crosswinds (described by one local cynic as a "wedding factory") in Greenbelt, Md. You know how he's dressed. It's not unfair to add that he could use a shave.

Oh, and his résumé stinks.

Getting Lucky

Among IT workers, job fairs have a mixed reputation. They "remind me of singles bars," says one anonymous IT source.

Many job seekers suspect that some advertised jobs don't exist at all — that the point is to capture attendees' résumés and then bug them with irrelevant job pitches for months, even years to come.

Job seekers' biggest complaint is that they would like to meet fellow engineers at job fairs. That way, they could evaluate a recruiting company's IT staff and decide whether they're intrigued by its technology environment. Instead, they are beset by human resources people whom many hold in, er, less than high regard.

"The trick to finding a job in this business is to bypass the jerks that populate personnel departments," says John Miano, chief engineer at Colosseum Builders Inc., a Summit, N.J., software services company for the entertainment industry. Miano estimates he's been on 75 job interviews. At career fairs, he says, "the only people you are likely to see are personnel people."

Even IT workers with higher regard for human resources would rather gab with engineers. According to Clint Byrum, now a software consultant at Monterey, Calif.-based CorporaTech Inc., job-fair recruiters "are generally a mixture of . . . top-notch recruiting types and top-level engineers. Unfortunately, the recruiters probably outnumber the engineers 3-to-1."

Memo to IT recruiters: To make a good impression on job seekers, drag a carload of actual engineers to the next career fair.

Truth be told, Steve Magner would prefer to talk with tech-ignorant human resources people right now. Reason: Any reasonably technical question from an engineer is liable to blow his cover. Everything Magner knows about being an Oracle database administrator he learned by scanning a couple of *Computerworld* stories in the Martin's Crosswinds lobby.

As it turns out, that's enough to get by. There are 20 booths; Magner holds at least a brief conversation at most of them and is never unmasked. Interestingly, the software engineers who staff three or four of the booths are no more likely to ask tough questions than the human resources types.

Of course, not being exposed as a fraud is hardly the same as knocking 'em dead. Magner's attire causes many hiring reps' gazes to harden (one woman actually winces). And some who scan the résumé, with its poor writing and obvious job-hopping, get that No Sale look in their eyes even while Magner tries to schmooze them.

But most want to know when he can start. He is asked, over and over, about experience, salary range and availability. And he is peppered with sales pitches on company benefits. Only Mani Persaud, human resources manager at an Arlington, Va.-based company called Advanced Systems Development Inc., grills Magner. Persaud wants to know about certification . . . about specific recent projects . . . about other technical proficiencies.

Magner's collar, buttoned or not, begins to feel tight. He beats a hasty retreat.

Do You, Do You, Do You Wanna Dance?

David Foote of Foote Partners LLC, a New Canaan, Conn.-based analyst group, voices the Big Fear about job fairs — the fear that hiring companies are too polite to discuss. "Who shows up at these things?" Foote asks. "These days, the good people have a way of being found."

While "not a big fan" of job fairs, Foote recognizes their value. "They offer this face-to-face contact," he says, that Internet recruiting can't. He says the top reason organizations lose IT workers in their first 12 months is that they're "so excited to fill a particular skill that they don't think about the person." The career fair's face-to-face meeting, Foote says, can help companies avoid this problem.

Recruiters say they fill all sorts of positions, including very high-level ones, at these events. "We look for managers, testers, developers, the works," says Susan P. Lane, Arlington, Va.-based manager of IS recruitment and staffing at Bell Atlantic Corp., which does a great deal of job-fair recruiting ("We did three this week," a tired Lane says).

"One nice thing [about a career fair] is that you never know" who you'll find there, agrees Jim Gattuso, mid-Atlantic regional staffing manager at Raytheon Co. "We've hired recent college grads all the way up to high-level people."

What do recruiters look for in a job-fair prospect? About what you'd expect. "Have a 30-second synopsis of yourself," Gattuso says. This quick story, also in vogue among capital-hungry entrepreneurs, is called the "elevator speech." "You must be able to quickly summarize what you've done and what you want to do," he says. "Don't just mosey around," adds Lane. "Know what you're looking for and sell yourself."

Gattuso, Lane and analysts agree that job-fair attendees should do the following:

- Research the companies that will be at the fair.
- Dress professionally.
- Be prepared to tell recruiters what kind of pay you want. Make sure it's reasonable for the job and the region.
- Rehearse your elevator speech.
- Bring enough résumés. (Lane says you wouldn't believe how many people run out.)
- Don't bring your kids. (Gattuso has seen it done.)

So Lonely

At the fair, Magner raps with a bunch of fellow lookers. One, a sharp-dressed guy whose English is limited, is chipper. He's landed jobs through fairs like this one before. In fact, he's got a decent position as a LAN manager right now, but he hates his commute ("Thirty-five minutes!" he tells Magner, who doesn't think that sounds too bad at all) and is confident he can find something closer to his Columbia, Md., home.

How does this event stack up to others, Magner asks another guy who looks permanently angry. "'Bout the same," the guy says, gesturing at the booths. "They all say they love you, then" — shrug — "no calls."

Indeed. Two weeks after passing out 20 résumés at the Greenbelt job fair, Steve Magner — job-hopper, slob, fictitious Oracle database administrator — hadn't heard from a single employer. Thumbs up, recruiters. ◗

Ulfelder is a Computerworld *features writer. He can be contacted at steve_ulfelder@computerworld.com*

Steve Magner

7 Lincoln St., Framingham MA , 01701
(NOTE: Moving to the Washington, DC area effective Dec. 1, 1999)
stevemag_99@yahoo.com

Desired Opportunity: A fullfiling, rewarding career at a company that respects the individuals and offers a growth path

Last position: Oracle Data Base administrator

Skills: C++, Visual Basic, Oracle 7.3 (OCP), Oracle8, Oracle 8i, SQL, PL/SQL

Experience:

International Data Group
Framingham, MA
September 1999 - October 1999
Position/Title: Oracle DBA
Duties: Set up databases, configured server, tuned database engine at major information services company

Fuller Road Software
Westborough, MA
May 1999 - July 1999
Position/Title: Oracle DBA
Duties: Developed database recovery and backup procedures (my predecessor was incompetent, or so I was told)

The Computer Shack
Marlboro, Mass.
Dec. 1998 - April 1999
Position/Title: Roving Tech
Duties: Helped local businesses with PC troubleshooting

International Data Group
Framingham, MA
September 1994 - Oct. 1998
Position/Title: Help Desk Technician
Duties: Helped end users troubleshoot there PCs.

Johnny Westlake Auto Thrill Group
Amherst, NY
1986-1992
Position/Title: Wall-of-flame specialist
Duties: Variety of jobs, including car prep, driving and general daredevil work, in automotive entertainment business specializing in Midwest fairs and sporting events

Education:
Kenyon College
Gambier, OHio
Degree: BA
Class of 1983
Major: Theatre Arts
Minor: Electrical Engineering

Personal: 38 yrs old, enjoy reading, discussion groups, Medieval Faires.

Cycle Time

BY STEVE ULFELDER

WHATEVER it is your business sells, you need to deliver it better, faster, cheaper. Or else. Cycle-time reduction is a vital tool in doing so. And these days, information technology goes hand-in-hand with cycle-time reduction.

Cycle time is the amount of time it takes to complete a process. Any process: developing a subassembly, collecting accounts receivable or delivering a product to market. The latter, time to market, is perhaps the best-known. According to a report published by the FedEx Center for Cycle Time Research at the University of Memphis, "All too often in organizations, less than 3% of the elapsed time performing a process has anything to do with real work." The rest is spent "scheduling, waiting, needless repetition, getting lost · [and] getting found." You reduce cycle time by trimming the fat and focusing on the real work.

The first generation of the cycle-time improvement, launched largely in Japan, focused on operations and required little from IT. In the 1980s, *kanban* and *just-in-time* became business buzzwords as production got leaner. But with these operating efficiencies in place, IT is about the only way left to cut cycle times.

IT Reductions

IT has enabled dramatic reductions in cycle times. New cars go from concept to showroom in as few as 24 months, a 50% reduction over typical 1990 time to market. Computer-aided design (CAD) tools are a major factor; design processes that once required time-consuming clay models are now done online. Global collaboration shortens cycle times, too. For instance, engineers at Detroit-based General Motors Corp.'s power-train division use an intranet to exchange complex documents — CAD drawings, electrical diagrams and software source code — with colleagues all over the world.

Naturally, the Internet is helping shrink cycle time, especially critical time to market. Traditional consumer clinics and focus groups are giving way to Internet-based feedback systems, in which consumers study and critique virtual prototypes. Stuttgart, Germany-based DaimlerChrysler's PT Cruiser will use this tool.

This online response gathering is "so much faster and cheaper" than traditional focus groups, says Scott Elliott, a principal at Product Development Consulting Inc.'s Santa Rosa, Calif., office. Using the Web, he says, "you can survey 1,000 people . . . and get a 60% response. Takes two weeks. It used to take months." Boston-based Product Development has helped Lucent Technologies Inc. in Murray Hill, N.J.; Cisco Systems Inc. in San Jose; Eastman Kodak Co. in Rochester, N.Y.; and others define product specifications.

Ford Motor Co. in Dearborn, Mich., and GM are battling to use the Internet to reduce cycle times. Both companies hope recently announced e-commerce plans will reduce costs throughout their supply chains [News, Nov. 8]. As Brian Kelley, president of Ford's global e-commerce unit, told *Computerworld*, "If we don't see a significant reduction in [manufacturing] cycle times, we won't have done our job." The automakers say that in four years or less, they'll be delivering built-to-order vehicles in three days.

Is there such a thing as being too fast to market? Elliott says yes. It's "becoming a little less of an issue," he says, supplanted by total return on new products. Companies that jump the gun risk finding "customers aren't ready, or they can't ramp up fast enough," says Elliott. "People who do a better job of product definition and development, but aren't quite as quick to market, can get a better return."

Christopher Meyer agrees. The author of *Fast Cycle Time*, Meyer says coming to market "fast, with junk, is not good." And the Internet has another effect too, he points out: If you do try to sell junk, "everybody knows about it" in days.

Business-to-Business

While the Internet's affect on business-to-consumer cycles has appeal, Meyer and others believe business-to-business is the mother lode. Most of the advantages to be had by the fast movers — the Amazon.coms, the eBays and the Yahoos, which Meyer calls "basically a landgrab" — are gone. "If this is a game, the landgrab is certainly in the second half," he says. "Maybe the fourth quarter."

But the steadier business-to-business effect of the Internet will eventually be the Louisiana Purchase. The reason: By eliminating distance as a roadblock, the Internet is breathing new life into collaboration. "One of the old tenets of product development is that cross-functional groups should be collocated," Elliott says. "But that's flattened out. People are learning to collaborate over the Net."

Global collaboration within a single business is old hat. What's newer is "horizontal outsourcing." Rather than ordering suppliers to build subassemblies to rigid specifications, companies "look to them to add value," Meyer says. "The community goes beyond walls of enterprise." And it might as well, he adds, because "research shows that if you're 100 meters from another person, they may as well be on another continent."

Thus, collaborating with a supplier in Bangalore doesn't have to be any harder than collaborating with the sales department three stories down.

Experts agree that as Web-based collaboration grows more comfortable and robust, cycle times will continue to shrink. ◗

DEFINITIONS

Cycle time: The time that elapses from the beginning to the end of a process or subprocess. The process in question may be as extensive as conceptualizing, developing, testing and bringing to market a complex product — or as simple as putting one bolt on that product. In either case — and those in between — finding places to cut time improves efficiency.

Time to market: The time that begins when resources are assigned to assess a product's feasibility and ends when the first production unit is delivered. In manufacturing, time to market used to be measured in years. Back then, it required extensive guesswork; companies sometimes committed themselves to products, then watched market trends doom those products by the time they hit production. Ford's Edsel is a notorious example. IT has both necessitated and made possible faster turnaround.



COMPUTER-AIDED DESIGN tools, such as the one shown here, and the Internet have been critical in shortening cycle times and time to market for the Big Three automakers, as well as for many firms in other industries

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

JOE AUER/DRIVING THE DEAL

Keep corporate changes in mind

OFTEN WE SEE an organization going through significant organizational or operational changes — a merger, an acquisition or divestiture, a major restructuring, a reorganization of data centers or an IT outsourcing.

Such changes hold challenging issues of all sorts. But often overlooked until the last minute are the severely limited usage rights posed in vendors' standard IT contracts. When these come to light, the impact on the customer can be ugly. Contract "gotchas" that limit the user's rights to move, transfer or otherwise change how the vendor's products are used are an unpleasant surprise for the uninitiated.

Here's a common scenario: A customer wants to move, combine or reorganize data centers, or perhaps two companies have merged and are combining processing centers. But because the software license specifies that the software can be used only on a certain machine, or at a certain site, or by a specific corporate entity, the customer will be in breach of the agreement.

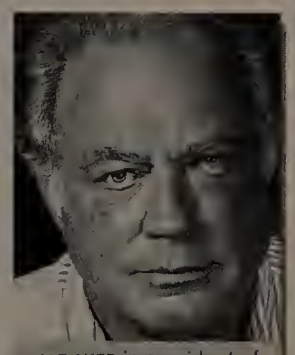
A "stuck" customer must then negotiate for broader usage rights with the vendor to regain contract compliance (also called begging). At this point, the customer is at the vendor's mercy and has no negotiating power, resulting in hefty costs as the vendor inflicts its "transfer fees" or other such tariffs (also called highway robbery). These fees aren't accidents; the vendor considers them an important revenue stream.

The sad thing, of course, is that this can be avoided or minimized by considering any major future operational or organizational changes when initially negotiating IT contracts. If that hasn't been done, customers should diligently review their IT contracts for issues and limitations pertaining to usage, location and upgrades early in the analysis phase of a change event. Having done this, the customer can then factor any additional costs into the cost/benefit analysis of the anticipated change.

So once again, we find that a minimal amount of extra time spent negotiating anticipatory rights, remedies and flexibilities into a deal at the outset can save your assets in the future.

Shell Game

It seems my Dec. 6 column on software upgrade fees struck quite a chord with Roy Niemann, a database administrator at a high-tech firm in the Northeast. Roy had strong words (deserved, I'm sure) for several IT vendors' upgrade fee practices. Roy's company is even building some IT solutions in-house rather than exposing itself to vendor ploys and gotchas. (To review the column, check out my Web site: *www.dobetterdeals.com/computerworld.*)



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Roy also had insights about a vendor that is famous for its "shell game." Here's how he described it:

"They repackage maintenance packages so you're never really sure what you're buying. Further, they steadfastly refuse to negotiate a site license for medium-size companies like us. We're stuck paying $350,000 maintenance fees every year that escalate up to 18% a year. We haven't even rolled out major pieces of our Internet [applications for customers] because of their extortion fees for seats on the Internet. Better yet, even though they have a sales office about five miles from our site, we never see a sales rep. When we do call for one to come in and talk to us he/she is a) incompetent, b) clueless or c) agenda'd with particular products to sell us. Is this any way to foster a relationship with your customer?"

I'm sure we all know the answer to that question. But Roy's company's dilemma is common. Small and medium-size firms don't bring as much firepower to the negotiating table or a brand name the supplier can exploit for public relations purposes.

So let's help each other out. If you represent a small or medium-size firm buying IT, let's hear your success stories. How have you gotten vendors to treat you fairly and follow up with good service? E-mail me your stories or tips, and I'll address some of them in future columns.

Hang in there, Roy. Help may be on the way. ◗

BRIEFS

New CTO at 1-800-Flowers.com

1-800-Flowers.com Inc. in Westbury, N.Y., has appointed Jeffry A. Borror as chief technology officer. Borror has more than 20 years of experience in the information technology field. He joins the company from Daiwa Securities America Inc. in New York, where he has held the position of IT director for the past three years.

Boost for Web Banking

First Tennessee National Corp. in Memphis has chosen Westport, Conn.-based Home Financial Network Inc.'s Total Web Financial System to provide additional services on the Web. The system will let First Tennessee customers conduct online banking and make bill payments. It will also allow it to offer online applications and content.

Online Grocers to Use Cost-Saving System

Several online grocers, including Albertsons.com, GroceryWorks.com, HomeGrocer.com and Streamline.com, have licensed Roadnet Technologies Inc.'s Consumer Direct software and hardware systems. Roadnet is a UPS Logistics Group company in Towson, Md., a subsidiary of Atlanta-based United Parcel Service of America Inc. The system was designed to help online grocers maintain order accuracy, meet customers' preferred delivery times and provide cost-saving routes that eliminate the need to charge a delivery fee.

Bonuses Decline

According to a new study by Hewitt Associates LLC in Lincolnshire, Ill., 12% of 268 companies surveyed nationwide discontinued the practice of doling out holiday bonuses last year, while the majority of companies (52%) never offered such stipends.

Of the 36% of companies that still provide their employees a holiday bonus or gift, 37% provide the bonus in cash, and 29% give out food, such as turkeys or hams. A holiday party is hosted by 26%, while 24% give employees a gift certificate to a local retailer. Some employers provide more than one type of holiday bonus.

Self-Clearing Firm

Web Street Securities Inc., an online brokerage firm and subsidiary of Web Street Inc. in Deerfield, Ill., has filed with National Association of Securities Dealers Inc. to become a self-clearing brokerage firm. Web Street's self-clearing operations are expected to begin during the second quarter this year. Web Street expects to offer its customers after-hours trading, lower margin rates and increased trading opportunities.

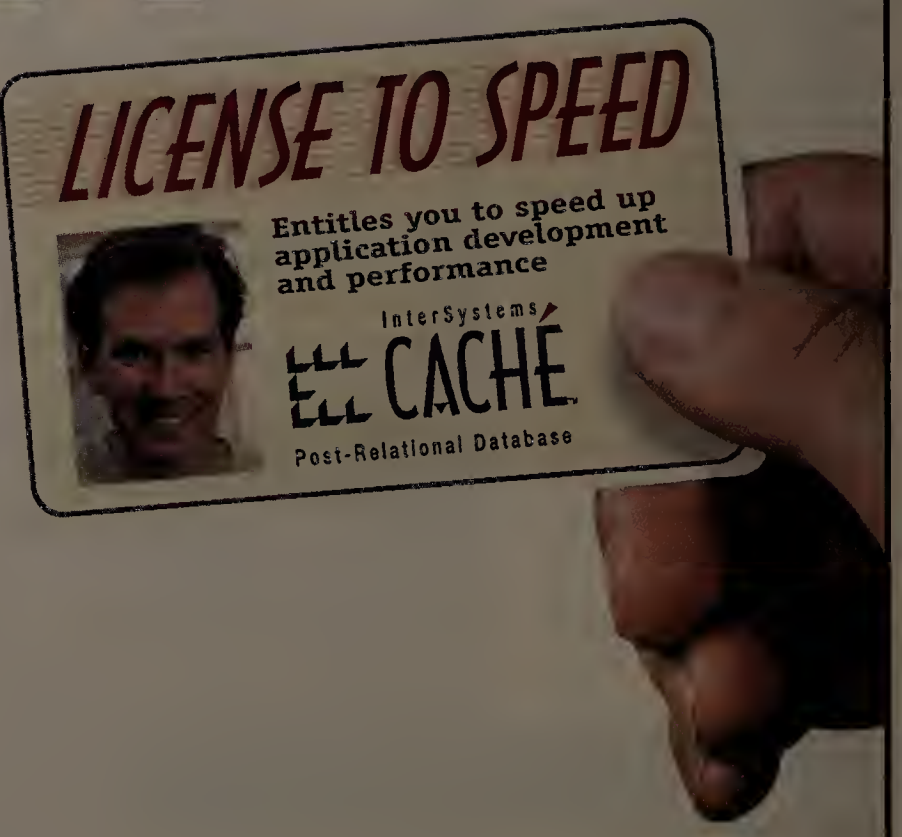
Gifts via Handhelds

PC Flowers and Gifts.com Inc. (*www.pcflowers.com*) in Stamford, Conn., and Rovenet.com in Southampton, N.Y., released QuickGift Wireless, a new wireless flower and gift e-commerce system for owners of Palm VIIs, the handheld from Santa Clara, Calif.-based Palm Computing Inc. Through Rovenet.com's QuickGift wireless technology application, a Palm VII user can now download the wireless application and link directly with PC Flowers and Gifts.

Staples Upgrades Site

Staples.com in Framingham, Mass., upgraded its e-commerce site (*www.stapleslink.com*) for contract customers, to make it easier for midsize to large businesses to order office supplies online. The Web site now features comprehensive reporting functions to better track and monitor spending, in addition to improved navigation to help users make purchases.

Build & Run Web Apps Faster.



Caché, the e-DBMS for the post-relational era, provides such a rapid development platform for complex Web applications it's like having a "License to Speed".

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All this is made possible by Caché's multidimensional data server and application server, giving you multiple ways to access data, multidimensional storage architecture, scalable performance, and richer technology for Web and object development.

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CACHÉ e-DBMS

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TECHNOLOGY

THE REAL LESSONS OF Y2K

The extraordinary attention we paid to security during the year 2000 rollover seems to have scared hackers off, writes Deborah Radcliff. Hacking activity was actually lower than normal, she says. Imagine if we were this careful all the time. See Hack of the Month. ▸ 62

REDESIGNED MIDDLEWARE

Software Technologies added high-level business logic tools and an open messaging architecture to its suite of enterprise application integration tools. Users and analysts generally praise the new suite, eGate 4.0, but say it isn't a unique or one-stop system. ▸ 62

SPEECH TECHNOLOGY

To further boost the usability of speech recognition software, developers need to find a way to enable it to understand context, says Gaston Bastiaens, CEO of Lernout & Hauspie. He sees ambient intelligence as a way for Wireless Application Protocol-compliant telephones to support speech recognition and translation, and he wants more context-based engineering for improvements in speech products. ▸ 67

QUICKSTUDY

Most software has to request other software to do things for it. This is where application programming interfaces (API) come in. They set the rules for how one piece of software talks to another. One analyst equates an application without APIs to a house with no doors. ▸ 66

STICKY DISKS

Users who listened to Y2K experts and powered down their disk drives for the date change may have run into a problem called "stiction." The symptom? The disk will fail when you try to power it back on. ▸ 63

EMERGING COMPANIES

Rackspace.com started out selling its services — Web server outsourcing — to small and medium-size businesses. But the company's rock-bottom pricing, fast turnaround and flexible options could prove equally attractive to large organizations. The Rackspaces of the world may come through on due-yesterday Web projects and pilots where overworked, slow-to-react IT departments can't. ▸ 72

NET STRATEGIST

To be an Internet technology strategist you need a little of everything. Companies want their Web efforts to generate profits and blow away the competition. A new breed of techie, Net technology strategists are taking responsibility for end-to-end development of competitive electronic-business processes and applications. ▸ 74



MANAGING CONTENT RIGHTS is the key to unlocking new business online, says Web-site designer Elizabeth Osder

MARK HARRISON

PROTECT YOUR ONLINE CONTENT

WITH THE PROLIFERATION OF DATA, MUSIC AND IMAGES on the Net, it's becoming harder and harder for companies to protect their intellectual property. But forward-looking organizations are experimenting with tools and procedures to protect property such as images, sound, video and other content in nontext, nondata formats.

68

STC Updates Integration Tools

Observers like the improvements but want a one-stop method to link applications

BY DAVID ESSEX

SOFTWARE Technologies Corp. (STC) has added high-level business logic tools and an open message architecture to its redesigned suite of enterprise application integration tools. Customers and industry analysts generally praised the new suite, called eGate 4.0, but said it isn't a unique or one-stop tool.

EGate's distributed Web-based architecture was designed to help companies quickly tie together disparate applications and data sources and integrate them with new e-commerce applications. The upgrade is STC's latest entry in the market for prepackaged enterprise application integration (EAI) tools.

Corporate mergers and acquisitions, increased investment in customer service front ends and the rush to put up e-commerce sites are driving the demand for EAI. EAI was a $312 million market in 1998, and it is growing by nearly 100% annually, according to market research firm International Data Corp. (IDC) in Framingham, Mass..

However, one potential eGate customer said the one-size-fits-all EAI tool is still a dream. The Principal Financial Group in Des Moines, Iowa, is currently evaluating three EAI products to integrate legacy applications in a single interface to customers, said Scott Daughhetee, a senior systems analyst at the company.

He said that while eGate generally delivers on its promises, it can't, for example, fully automate "fork-and-join" processes, in which two parallel functions must finish before a later step, such as committing a record to a master file, can be completed.

"It can be represented in eGate but is not automated, so I have to write a little code to do it," he said. But eGate reduces the amount of code he must write, said Daughhetee.

Lekha Rao, an EAI practice manager at Electronic Data Systems Corp.'s Troy, Mich., division, said EDS probably will use eGate.

STC has scrapped the hub-and-spoke architecture of its earlier DataGate product and now distributes integration services across the network to help eGate scale with the number of Web transactions.

New Era of Networks Inc. (NEON) in Englewood, Colo., unveiled its entry in the field, e-Biz Integrator, last September. E-Biz Integrator lets developers control integration at the level of workflow process, such as credit authorization and inventory management.

STC ranks sixth in EAI market share, behind Tibco Software Inc., NEON, Viewlocity, TSI Software Ltd. and IBM, said IDC analyst Ed Acly.

EGate 4.0, which started shipping Sept. 30, is available for less than $100,000 for pilot projects, but full installations can cost millions of dollars.

Essex is a freelance writer in Antrim, N.H.

AT A GLANCE

EGate 4.0

The product: EGate 4.0 from Software Technologies Corp.

What it is: A redesign of the company's suite of tools for integrating various applications and databases.

What's new: High-level business logic tools and an open messaging architecture.

Customer/analyst feedback: The updates to the tool suite are worthwhile, but eGate isn't a unique or one-stop tool.

FireWire Scanner Debuts for PCs, Macs

BY RUSSELL KAY

Umax Technologies Inc. in Fremont, Calif., has announced the first professional-grade scanner that can connect to a Macintosh computer or a PC via a dedicated IEEE 1394/FireWire connection.

The PowerLook 1100 scanner offers data-transfer rates twice as fast as with SCSI, and it's hot-pluggable. Also, using FireWire eliminates most of the technical difficulties associated with SCSI, as it does away with requirements for termination, preassigned addresses and parallel port pass-throughs.

The new scanner offers a maximum density of 3.4 for fine details, 1,200 by 2,400 dpi resolution and an effective 42-bit output using Umax's Bit Enhancement Technology. Available accessories include a transparency adapter, autodetect frame holder for automatic scanning of up to 12 35mm slides and batch-scanning capabilities. The PowerLook 1100 scanner is available for $999.

DEBORAH RADCLIFF/HACK OF THE MONTH

Y2K's real lessons

I AM REPORTER. Hear me crow. Not only was New Year's Eve a nonevent for hackers as I suggested it might be in my Dec. 13 column, "Evil-Code-Fix Myth" (*www.computerworld.com/home/print.nsf/all/991213D0B2*), but Y2K hacking activity was actually lower than normal.

Take the International Computer Security Association (ICSA), a software testing and security services vendor in Carlisle, Pa., which monitored more than 1,000 client sites. Says Peter Tippet, founder and chief technology officer: "We had two calls, neither of which were related to hacking or security incidents."

But before you clip my December column for your Y2K dartboard, think of this: Prevention is better than a cure. As a result of press warnings, vigilant Computer Emergency Response Teams (CERT) worldwide kept watch for Y2K security incidents from Dec. 30 through Jan. 3.

"It would be the worst opportunity to try and hack into a system because the attacker would be noticed instantaneously. So you could say all this work was preventative," says a sleepy Ken Van Wyk after pulling 12-hour shifts for three days. Van Wyk is the CTO and vice president at the security services firm Para Protect Inc. in Alexandria, Va.

For anyone wondering, here's what really went on over our New Year's weekend. And it's a snoozer:

Tippet's top man, David Kennedy, who runs the ICSA's Recon group, spent the night monitoring incoming data from his home. But mostly he just watched football. He was asleep by 1:30 in the morning.

Mike Young, manager of the data security department at the online auction site QXL.com in London, worked 10 19-hour shifts preparing for new Y2K viruses he'd read about. "We closed down our link to the Net, put up redirects through our firewalls and had log monitors running," Young explains.

When the big weekend arrived, Young and his staff passed the time drinking "good champagne" and watching the fireworks on TV at the office.



DEBORAH RADCLIFF is a *Computerworld* contributing writer in Northern California. Contact her at derad@aol.com

Things were "quite slow" at critical U.S. Army networks across the country, according to Jeffrey Hormann, commander of the Army's Computer Crime Investigative Unit in Fort Belvore, Va.

Yes, scans, pings, Internet Control Messaging Protocol probes and denial-of-service attempts were reported. Between Dec. 31 and Jan. 3, the SANS Institute posted 32 such incidents. And Carnegie Mellon University's CERT in Pittsburgh received about 30 incident reports per day, which is normal, according to Jeffrey Carpenter, senior Internet security technologist at the Carnegie Mellon CERT.

So besides watching those journalists who printed claims made by fear-mongering vendors eat humble pie, consider this:

1. Wouldn't it be great if we could monitor our networks this carefully all the time? Attackers wouldn't have a chance.

2. It's better to be overprepared than underprepared.

Think of this as a fire drill that may have helped stave off hacker attacks worldwide.

Powering Down Drives Is a Sticky Problem

BY DAVID ORENSTEIN

Users who took the advice of Y2K doomsayers and powered down disk drives that usually run nonstop could regret doing so. The drives could fail on power-up due to a condition called "stiction," which has nothing to do with the Y2K rollover.

Ask multiple experts to define *stiction*, and you'll get multiple answers. But they'll offer one solution: Keep long-running drives running, and replace drives that are at least 6 years old.



PACIFIC GAS & ELECTRIC changed its mainframe procedures to avoid stiction, says operations manager Marc DeNarie

Some experts say stiction is caused by "grunge" accumulating on the drive head. Periodic power-downs clean off the grunge, which is why long-running drives are susceptible to stiction.

Other sources say coagulated lubricant sealed in the drive spindle prevents the drive from turning at power-on.

An advisory published by the SANS Institute in Bethesda, Md., warned of grunge-based stiction among drives that have been running for months prior to being shut down for Y2K.

The author of the advisory, Greg Houlette, recommended parking the drive heads without cutting power to the drive, a technique known as "spinning down."

Charles Burns, an analyst at Giga Information Group Inc. in Cambridge, Mass., said the most stressful part of an electronic device's life is when it is turned on. Thus, spinning down, rather than powering off, is a good solution.

SANS director Allan Paller said that six years ago a major IT vendor lost 18 disk drives to stiction. But Paller said that, to his knowledge, no stiction problems occurred as a result of the year 2000 rollover.

Rather than powering down for the year 2000 rollover, Dalton, Ga.-based Shaw Industries Inc. backed up data through about 10 p.m. on Dec. 31 and suspended transaction processing on its Groupe Bull mainframe until after midnight, said IT director Robert Watson. Six months ago, the company took the added precaution of buying new EMC Corp. drives because it didn't want to roll into the year 2000 with old hardware, he said.

Marc DeNarie, an operations supervisor at Pacific Gas & Electric Co. in San Francisco, said that the company's now-retired Control Data Corp. mainframe system had exhibited stiction in the past and that the company has stopped powering down drives as a result.

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December 22, 1999

BRIEFS

IBM, Nortel Unveil Mainframe Links

IBM has announced Fiber Saver, an optical connectivity technology that allows mainframe links at distances of up to 25 miles. The product is the first offering from IBM's agreement with Nortel Networks and is scheduled to ship Feb. 25. IBM didn't disclose pricing details.

Sybase Supports Sun's Cluster 2.2

Sybase Inc. in Emeryville, Calif., has released native Sun Microsystems Inc. Cluster 2.2 support for Sybase's primary database product, Adaptive Server Enterprise 12.0. The database, which was released in the third quarter of 1999, is more tightly integrated with Sun's Solaris operating system on the Sun 32-bit and 64-bit platforms.

Cable Modem Shipments

Worldwide shipments of cable modems were expected to reach 3 million last year, according to estimates from market researcher Dataquest. Dataquest predicts 1999 to be the last year that cable modems based on proprietary standards will outsell standards-based modems. "With the PC now morphing into a communications device in the home, the unrelenting high visibility of everything Internet as well as the rapidly expanding market for remote teleworkers and home offices, cable modem-based Internet access offers what consumers want at a highly competitive price point," said Dataquest analyst Patti Reali.
www.dataquest.com

Octane Releases Web CRM Suite

Octane Software Inc. in San Mateo, Calif., has released an Internet-based customer relationship management suite (CRM), called Octane 2000. The product has interfaces and tools for linking the suite to databases that perform e-commerce tasks. The suite includes applications for order management, campaign management, self-service and assisted-service, plus enhancements to Octane's e-mail management, computer/telephony integration and call control.
www.octaneinc.com

Frame Relay on Rise

Despite competition from IP networks, spending on frame relay will increase 23% this year, predicts a report from The Insight Research Corp. The increase in spending, to $1.14 billion, will be driven by several factors, including improved standards, more reliable networking equipment and the globalization of business networks, according to the report. However, the report predicts that by 2004, growth in the frame-relay market will slow due to the completion of new fiber-optic cables, an increase in overseas transmission capacity and competition from IP-based networks.
www.insight-corp.com

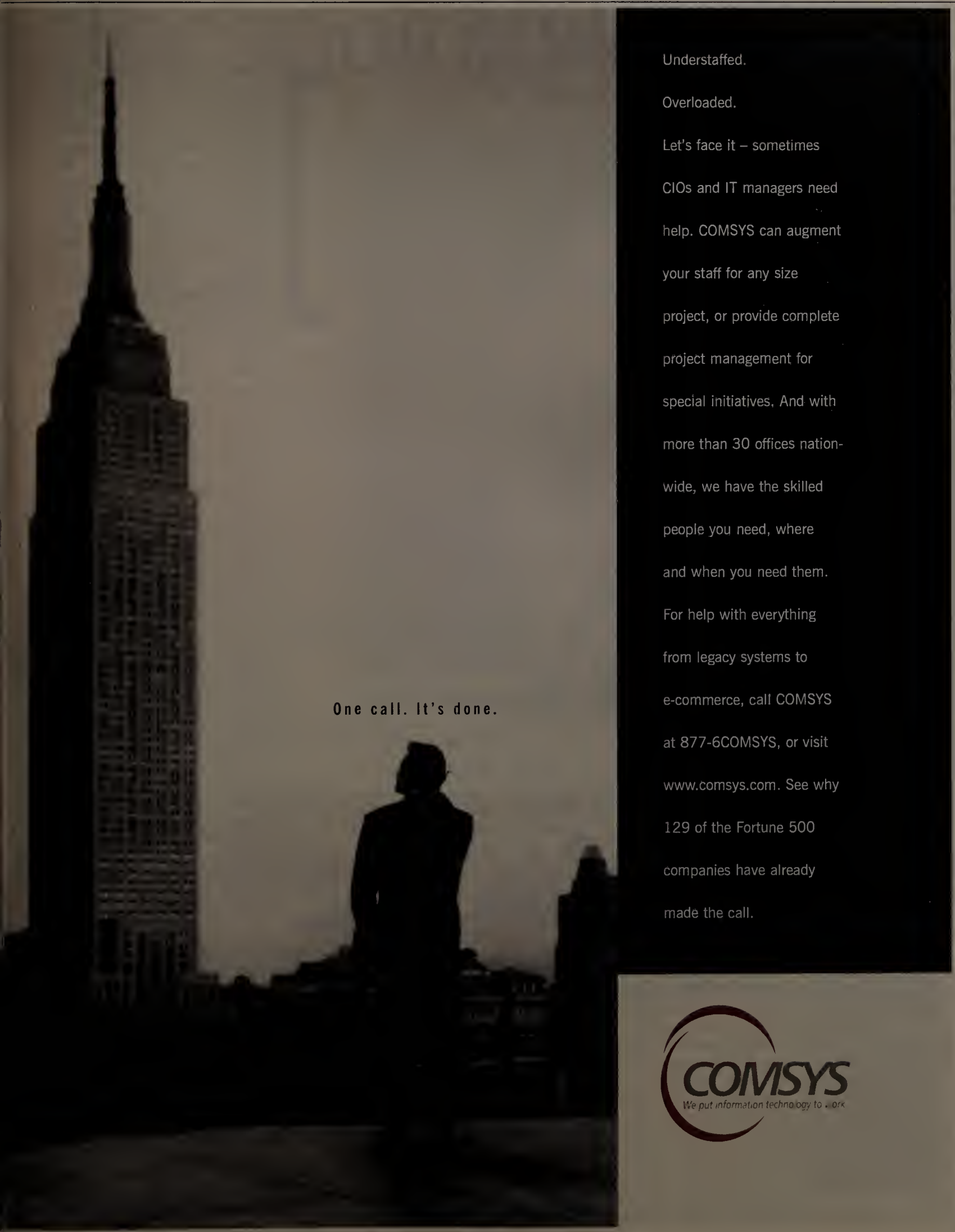


VA Linux Offers Free Open-Source Software

VA Linux Systems Inc. in Sunnyvale, Calif., last week launched a free online repository of open-source software projects, called SourceForge. According to the company, which owns the linux.com domain, SourceForge will contain more than 700 open-source projects done by more than 3,000 software developers in 76 countries.
http://sourceforge.net

Geac Upgrade

Geac Computer Corp.'s Atlanta-based applications division last week released an upgrade of its finance and human resources software for midsize users. The division also announced a companion package that lets workers access their personnel data via the Web. Pricing ranges from $100,000 to $250,000 for the SQL Financials and HR Release 6.0 software; the new HRPoint self-service application starts at $50,000. Geac bought the software last year from Clarus Corp. in Suwanee, Ga.
www.smartenterprise.geac.com



New American Software Release

Atlanta-based American Software Inc. last week released a set of applications that combine a Web-enabled version of its Intelliprise enterprise resource planning (ERP) software, with a variety of new packages supporting online business operations. The set includes software for managing online procurement, Internet catalog sales and reimbursement of employee expenses.

In addition, American Software said it is starting to resell business-to-business collaboration software developed by Logility Inc., also in Atlanta.
www.amsoftware.com

HR Product From SAS Earns Honor

HR Vision, a decision-support package from SAS Institute Inc. in Cary, N.C., has been named one of the top 10 human resources products by *Human Resource Executive* magazine. HR Vision is used to generate custom reports and perform analysis on human resources data from a variety of back-end data sources, including information from legacy systems and ERP applications.
www.sas.com

Software Integration

AppWorx Corp. in Bellevue, Wash., and Innovative Routines International Inc. (IRI) in Melbourne, Fla., are integrating AppWorx's process automation software and IRI's CoSORT data sorting and manipulation product. The integration is the result of a recent partnership formed by the companies.

The integrated application will be designed for use by data warehouse architects and administrators for automated data loading, staging and integration, as well as batch production tasks.
www.appworx.com
www.iri.com

Application Programming Interface

BY DAVID ORENSTEIN

YOU OFTEN have to rely on others to perform functions that you may not be able or permitted to do by yourself, such as opening a bank safety deposit box. Similarly, virtually all software has to request other software to do some things for it. To accomplish this, the asking program uses a set of standardized requests, called application programming interfaces (API), that have been defined for the program being called upon. Almost every application depends on the APIs of the underlying operating system to perform such basic functions as accessing the file system.

In essence, a program's API defines the proper way for a developer to request services from that program. Developers can make requests by including calls in the code of their applications. The syntax is described in the documentation of the application being called.

By providing a means for requesting program services, an API is said to grant access to or open an application. Buildign an application with no APIs, says Josh Walker, an analyst at Forrester Research Inc. in Cambridge, Mass., "is basically like building a house with no doors. Thc API for all computing purposcs is how you open the blinds and the doors and exchange information."

APIs also exist between applications. SAP AG's enterprise applications include APIs, called BAPI, that offer other applications access to business data. When an industry settles on a data standard, a common API allowing access to applications that process that data often follows, Walker says.

Middleware works by providing a standardizcd, API-like interface that can allow applications on different platforms or writtcn in different languages to interopcratc.

DEFINITION

An application programming interface (API) is a description of the way one piece of software asks another program to perform a service. The service could be granting access to data or performing a specified function. APIs exist for most enterprise software, and they are essential in operating systems, which control most of a computer's basic functions.

Although APIs provide a quick and easy way to tap into an application, they can be constraining for certain power users such as independent software vendors, says Adam Braunstein, an analyst at Robert Frances Group Inc. in Westport, Conn. Open source code exposes every instruction and operation in an application and therefore offers the most flexibility. But understanding source code can be time-consuming, and it also exposes the author's intellectual property.

When Novell Inc. was rumored to be considering opening up the source code for its Novell Directory Services (NDS) software last year, then-Vice President Chris Stone said most corporate developers didn't want to delve into open source code. Instead, he said, they wanted additional sets of APIs they could work with more quickly. So far, Novell has kept NDS code closed.

Corporate developers should consider including APIs in applications they develop, especially if they expect the applications to last and interact with other applications, Braunstein says. As time goes on, the likelihood that another developer will need to tap an application's services increases. He says having the foresight to include APIs saves subsequent developers from having to find and review the source code.

APIs aren't difficult to create, but they can be difficult to learn, says analyst Larry Perlstein at Stamford, Conn.-based Gartner Group Inc. Application developers and vendors must constantly be thinking about whether their APIs will be understandable to future developers. "An API is useless unless you document it," he says, yet some vendors have left APIs undocumented.

APIs as Competitive Weapons

If a company wants to frustrate developers, it might keep its APIs secret or change them rapidly. Microsoft Corp.'s many critics, including government lawyers and competitors, have accused the company of engaging in such practices.

Andrew Schulman, who ferreted out several hidden APIs in Windows in his book *Undocumented Windows*, is now a consultant for Caldera Inc. in Orem, Utah, which has an antitrust suit pending against Microsoft. Instead of hiding APIs nowadays, Schulman says, "Windows has a kind of 'kitchen sink' architecture into which [Microsoft] can keep dumping new APIs. This API 'churn' is in part an attempt to keep Windows a 'moving target' so that it doesn't get cloned."

Judge Thomas Penfield Jackson cited a similar criticism in his Nov. 5 findings of fact in the Department of Justice's case against Microsoft: "Attempting to clone the 32-bit Windows APIs is such an expensive, uncertain undertaking that it fails to present a practical option for a would-be competitor to Windows."

But Perlstein says Microsoft competitors may be more jealous than justified in criticizing how the company handles the Windows APIs. Some "back doors" may be oversights. Microsoft spokesman Jim Cullinan adds that Microsoft is constantly improving Windows and updating and adding APIs, because to slow the pace of improvement would mean falling behind.

APIs and You

■ APPLICATION PROGRAMMING INTERFACES (API) can seem vague, and vendors or developers might wave them around like magic wands that solve all problems. But they really can be very simple and powerful. Everyone uses something similar to APIs in daily life all the time to request access to services.

APIs offer less flexibility than open source code but more flexibility than completely closed applications.

Imagine you have three neighbors: Closed Carl, Open Oscar and API Annie. Each of you is like an application. Like any neighbor, you sometimes need to borrow things from your neighbors, such as a lawn mower. This is the equivalent of applications integrating.



Closed Carl simply won't provide you with any services. He mows his own lawn behind a high fence. Not only is there no way to ask him for anything, you can't even walk onto his property to try because his fence has no gate. An application like Closed Carl exposes no source code or APIs.

Open Oscar is the opposite. He's so open that he will let you freely enter his yard whenever you'd like and even tinker with his mower so it suits your needs exactly. Of course, once you've changed the design from what's documented in the manual, you've entered the mower maintenance business. An application like Open Oscar has open source code, giving you free reign if you want it.

API Annie will let you borrow the mower if you ask in the right way (by cailing the "getMower" API in your own application code). You can't enter the gate without that request, and you can't open the mower and tinker with it. But you can get the service of mowing as needed. Applications like Annie, which are closed but have APIs, are the most common in enterprise settings.

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.

Putting Speech Technology Into Context

Gaston Bastiaens is president and CEO of Lernout & Hauspie Speech Products NV (L&H), a Belgian speech technology company with offices in Burlington, Mass. Analysts consider L&H a market leader, along with rivals Dragon Systems Inc. and IBM, in speech-to-text recognition software, as well as text-to-speech and translation software.

A Belgium native, Bastiaens started his career as a microelectronics engineer at Philips Electronics NV, where he helped develop the CD standard. He has also been a vice president at Apple Computer Inc. and CEO of Quarterdeck Corp., which was acquired by Symantec Corp. last March. He became president and CEO of L&H in 1996. Bastiaens recently talked about the future of speech technology with reporter Matt Hamblen.



BASTIAENS: "We adopt WAP protocols but make them user-friendly"

Speech recognition software has improved its reliability. What needs to happen to boost its usability even higher? People like to talk in a normal, natural way, and the computer needs to understand that. If you say, "Let us pray," what does that mean to a computer? It could be hearing, "Let us sit down to pray," or it could be hearing, " 'Let us spray,' said the painter." See? So you need the computer to understand the context, since there are so many meanings of words.

How do you create a computer that understands context? By building semantic networks. We are very good in [that] technology, which solves a lot of things on the morphological level and also the syntactic level. But semantics, rule-based computing, will not help you enough, so you have to go to natural language understanding, which requires the use of linguistics. With translation, you have to go even further in natural language understanding.

What big markets are upcoming opportunities for speech technology? The cell phone is a big market opportunity. The Wireless Application Protocol [WAP] is clearly going to bring the cell phone to the Internet, but it's not user-friendly because you still have to push all kinds of buttons to get information. So the thing is to bring intelligence to the server.

With Intel Corp., we are bringing spoken language, natural language, to the server accessed by thin clients running on the StrongARM processor [a fast Intel processor for handhelds]. We call it "ambient intelligence," and we'll release applications by the end of [this year].

Users really want an intelligent and intuitive interface and don't want to be bothered with keyboards and protocols. It has to be simple, and the information they want to get should be relevant and in their own language.

The solution is that we adopt WAP protocols but make them user-friendly. We take a voiceprint in five minutes [that is stored on a server and can be used to verify your identity]. If you want to subscribe to a service on the Internet, then you [reference] your voice profile and you can talk in your own language for Web browsing, e-mail and access to corporate data.

We also have speech-enabled stock markets in Seoul, and the telephony area [in Seoul] is a $200 million market today that will grow to $1.8 billion in 2003.

WHO IS HE?

Gaston Bastiaens started as an engineer and helped develop the CD. He now sits at the top of speech technology leader Lernout & Hauspie — a position in which business skills matter but engineering acumen doesn't hurt.

Many people buy your speech-to-text products. Others don't because they say they aren't reliable. What do you say to them? We don't try to sell speech technology to somebody who is an expert on a keyboard. But we sell it, for example, to [someone like] a doctor who needs it. We are releasing a full workflow process for doctors next year that allows them to dictate as they work and eliminates the need for a transcription service. [L&H announced Dec. 22 it would be spinning off its health care division and buying three companies to help build its workflow business.]

So there's no big horizontal market for business executives? There's a market, but it's not where we put the focus, at least today. If you are an executive who isn't very good at typing, this speech dictation product will provide an enormous productivity gain, no doubt. Sales guys are very happy with it because they are always in a rush.

How does Microsoft Corp.'s purchase of speech recognition company Entropic Inc. in October affect L&H, since Microsoft has invested about $60 million in your company? They bought with Entropic a group of 40 engineers from Cambridge University. We have said Microsoft needs to have speech engineers. We want Microsoft to soon integrate voice as an essential element of the user interface in the Microsoft [operating system]. The sooner they do it, the better for us in the industry. You can't say for antitrust reasons that you can only have a graphic user interface. That's against progress.

Does it help that you are a CEO with an engineering background? It helps definitely in outlining the strategic direction of the company and in management, when three quarters of the 1,800 people working here are speech engineers and linguists. But there are companies where there are MBA types who have accrued good skill sets and quickly adopt the expertise for the strategic direction of technology. I'm not a linguist, but I speak four languages because that's the nature of growing up in Belgium, and that helps in the job, certainly.

Protecting Your Property In Cyberspace

The Web's rise as a platform for commerce and communications is driving many organizations to protect their images, sound and text as well as trade secrets and application code

By Peter Wayner

ELIZABETH OSDER designs Web sites for companies like the *Financial Times* in London, and she has a problem. A vice president at iXL Enterprises Inc. in New York, she knows that the sites she designs must deliver readers and revenue. Many readers can bring in lots of revenue. But this revenue can be cut dramatically if someone steals the sites' content — text, images and layout. And digital content is easy to cut and paste.

But a complicated site drives away readers. "You can't manage the rights of your assets if you can't distribute them easily," she says, adding that there's a need to both control content and put it where it can be sold.

Many Web sites are grappling with similar concerns. The designers want their sites to be easy to use, but they also want to prevent illicit copies from cutting into revenue. Balancing these two needs is complex because you can't prevent copying. By the very nature of Web software, every time someone visits a Web site, his browser automatically makes a copy of everything there — it has to so the user can read the content. You just don't want users making copies for their friends.

The music industry looks at the growth of MP3 and its relatively small, downloadable digital music files with despair. Music fans frequently copy the files instead of buying legitimate copies from record stores.

This concern has led to a frantic interest in an area called digital-rights management. New companies are creating new approaches for corralling bits and reducing the proliferation of bootleg copies. Meanwhile, established companies are retrofitting older software to provide some content control.

At present, most rights-management projects are experimental. Reciprocal Inc. in Buffalo, N.Y., built a Web site to sell in electronic form the works of some authors at Simon and Schuster Inc., with proceeds going to charity during the 1999 holiday season. Adobe Systems Inc. has launched a site, PDF Merchant (*www.adobe.com/products/pdfmerchant/main.html*), to sell digital content encoded with Acrobat.

Most other solutions are still being kicked around in labs and boardrooms. The music industry is committed to finding a practical way to control proliferation of digital copies, but the technology is far from common. The Secure Digital Music Initiative has ambitious goals, but developing new and usable technology takes time. Sunnyvale, Calif.-based InterTrust Technologies Corp., a leader in this field, has started cooperative ventures with manufacturers and announced many solutions, but 1999 holiday shoppers found it easier to find products to play unprotected MP3 files.

The bad news: None of these schemes is guaranteed to work. If the information is displayed on the screen, then it is accessible in the computer. An illicit program can be designed to repeat the process and store an unprotected copy. An attacker could simply reprogram a device driver or use a debugger to unlock the key to any encryption. These programs, often called "screenscrapers," make illicit copies as they display the information.

Most companies acknowledge this danger but say they just want to make

Confusing Terminology

- **Digital rights management (DRM):** The use of technology to prevent unauthorized use of digital files (in any format – sound, images, text, documents or data) and/or to identify the source of such use.
- **Digital asset management (DAM):** Basically, inventory control as it is applied to digital assets such as photographs, images, company logos, advertisement art, video clips, scanned historical documents and historical and current data. DAM systems are often linked to databases that contain information about the digital asset. In the case of a photograph, for instance, there might be a database record identifying the date it was taken, the photographer, the place or people photographed and keywords for locating and indexing. DAM is concerned with finding and storing assets, while DRM is about controlling their use.
- **Content management:** The task of organizing, indexing and controlling access to large bodies of electronic documents over the Internet and other electronic networks. This typically involves a database system that can find, use and reuse content to maximize its value and minimize the cost to create, maintain and quickly assemble it for a particular business need. Nowadays, the term is often used to refer specifically to that area of Web site management involving pages that are dynamically assembled from existing content files and delivered in real time.
- **Document management systems:** Computerized systems designed to manage both electronic and paper documents (after digitization via optical scanning) together. These systems generally use a database to organize the stored documents and a search mechanism for retrieving them.
- **Knowledge management:** Realizing full value from an organization's collected data, business intelligence and the skills and knowledge of its workers. Elements include collaboration, business analysis, content management, information retrieval and workflow.

– Russell Kay

stealing information harder than buying a legitimate copy. George Friedman, chief technical officer at Infraworks, a digital rights management (DRM) developer in Austin, Texas, says, "We know we're going to be hacked, but we've designed our software to be easily upgraded. We plan on plugging the holes as quickly as they're discovered."

Tagged or Tied

Proposed technical solutions can be divided into two camps: tags and locks. Some companies insert hidden information, called tags or watermarks, into files. These tags can carry messages as simple as, "This document copyrighted 2000 by Wombat Love Music." More complex schemes can personalize watermarks with the legitimate holder's name, enabling the source of an illicit copy to be tracked down.

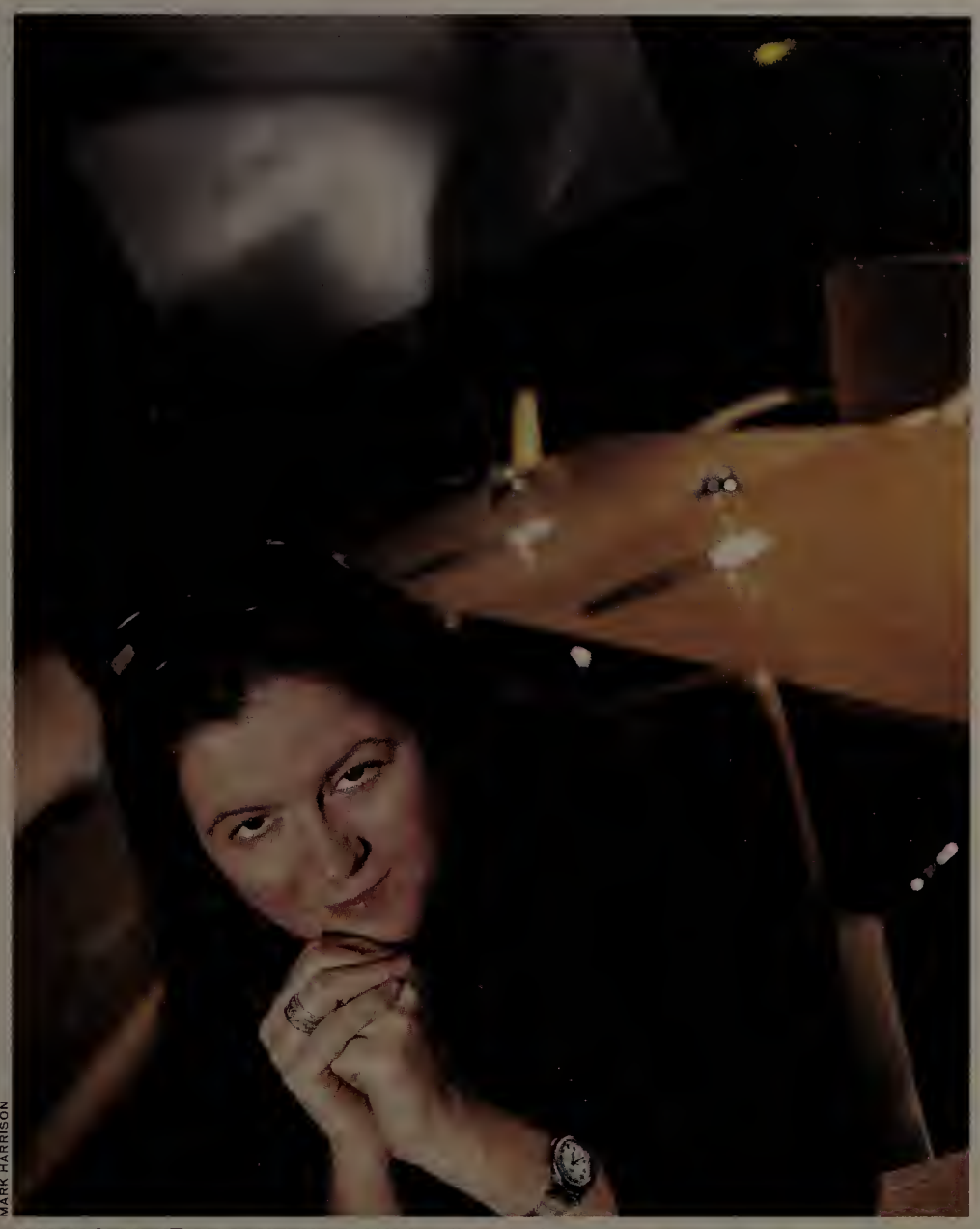
Locking up data is the other solution. Companies are disabling the printing functions and removing the cut, copy and paste functions from programs in the hope of thwarting document thieves. In some cases, developers are inserting new layers of protection software directly into the operating system to prevent copying at as low a level as possible.

San Jose-based Adobe is experimenting with both technologies. Its Photoshop software allows embedded watermarks in images. These watermarks, developed by Digimarc Corp., can survive cropping, printing, scanning and many compression functions. The system inserts signals of various frequencies into the background noise of an image with discrete fourier analysis. The presence or absence of specific frequencies is distilled into a number showing who owns the image.

Adobe is also expanding protection features in the Portable Document Format (PDF) of Acrobat. This allows print documents to be shipped in a relatively device-independent format. David Lehr, senior business development manager at Adobe, says the latest version has "all of the standard ways to control printing, editing, cut and copy text. What's different is we can lock it to a specific computing habitat."

The new system can examine the unique identification numbers in computers, hard disks or even Zip disks from Roy, Utah-based Iomega Corp. and lock up content so it can be viewed only in those locations. An Acrobat file could be locked up so it can be read only on a computer with a particular IP address. It could be attached to a particular Zip disk so it wouldn't open if copied onto another disk. The system bundles all potential restrictions into a small permissions file containing all the access information.

An extensive data-locking system, InTether, is being built by Infraworks. Its software patches actually infiltrate Windows to prevent piracy. The software blocks unauthorized copies by reprogramming device drivers for printers, disk units and other potential leaks. InTether stores all protected data in one big encrypted file. Any programmer who tries to access the data directly will encounter only noise.



MARK HARRISON

"MANAGEMENT OF CONTENT RIGHTS will be the key to unlocking new business," says Elizabeth Osder, Web-site designer at iXL Enterprises Inc. in New York

According to Friedman, Infraworks adopted this architecture because it lets the system protect data without changing individual applications. A word processor or spreadsheet, for instance, executes a system call to open a file. InTether intercepts it, sets up the blocks and then decrypts the data.

With InTether, documents can be programmed to be viewed for a certain period of time or a certain number of times. Printed copies can be forbidden or limited to a fixed number. This system enables all possible applications. It's an ambitious undertaking. The company must tackle all operating system versions and modify the software to deal with all changes. New features or versions can break older code.

One big challenge is protecting users' privacy. In recent months, users learned that software was surreptitiously recording and reporting on their usage patterns. In one case, Seattle-based RealNetworks Inc.'s RealAudio player would report every song a user listened to. In another, a toy cursor would report which sites a user visited.

Most Web operations make money by charging each person for access to data. This duplicates the traditional publishing model of selling one copy per reader, although it doesn't provide for lending copies to friends. The model also requires tracking what each person reads, a politically explosive strategy.

Today, many Web sites simply choose to disclose their surveillance procedures in advance. "There's a tremendous utility in personalization. It just will make people's work lives productive," Osder says. But she cautions that "policies have to be crystal clear, and keeping track of people's choices is a very high responsibility."

Fair Use

Another difficult political problem is supporting "fair use." This provision of copyright law gives a legitimate holder of copyrighted material several rights, including the right to make backup copies and to quote small portions of a document. There are too many legal loopholes to summarize here. But supporting the tradition promises to be a challenge for DRM companies.

"There's definitely a camp that feels that if you put too many burdens on the consumers, they're not going to use it. One reason that piracy occurs today is that there's no way to get [the product] legitimately," says Todd Sawicki, minister of the medium (a.k.a. marketing director) at Loudeye Technologies Inc., a Seattle company that processes digital music for the Web. For this reason, many DRM systems let owners of copyrighted material make a limited number of copies. Lehr says Adobe is trying to remain politically neutral by providing a wide range of features that content publishers can use or ignore. "The publisher can decide 'I'll let you extract text from a document or I won't.' This is a large debate for the publishing industry to figure out, not for Adobe [to solve]," he says.

Lehr points out that technology may enhance users' opportunities. If an Acrobat file is tied to a particular Zip disk, then that disk can be shared just like a book. The publisher doesn't need to worry about proliferating copies.

Criminalization

A big debate centers on how to deal with programmers who crack the copyright protection — which has already happened with DVD encoding. One problem: There are many legitimate reasons for circumventing the system. A record company wants to reissue an album but has lost the unprotected master. An artist creating a movie poster needs images from the protected MPEG version. Legitimate tools can quickly spread into the black marketplace.

Another dispute involves users of open-source operating systems like Linux or FreeBSD, who want to hook up new devices to their machines. But manufacturers trying to control their rights worry that open source code will make it easy to circumvent protection mechanisms.

All of these issues are being addressed by a new, fast-growing industry. Many different approaches are being tried, and the marketplace will sort out which solutions are useful and which fail.

Osder says her clients are taking a cautious approach. "The interesting problem for me is how to integrate the pieces," she notes. "How does your content-management system work with your rights system? How do you protect people's privacy while giving them the files they want?" Based on her experience, "management of content rights will be the key to unlocking new business," she says.

Wayner is a freelance writer in Baltimore. You can reach him at pcw@flyzone.com.

OUTRAGEOUS

JOSEPH BEGGS is angry.

Mainframe software vendors have price-gouged his company, claims the vice president of enterprise operations at Nabisco Inc. They've stuck him with outrageous upgrade fees and forced him into costly long-term contracts. He has watched in frustration as software has climbed from 15% to more than 40% of his data center budget in the past five years.

To put it bluntly, he's absolutely had it.

Beggs says he desperately wants to see mainframe costs brought more in line with the value he believes he's getting.

He's hardly alone. Powerful new hardware and falling processor costs are delivering far better price and performance on mainframe hardware than ever before. But even as mainframe hardware gets less expensive, the software it runs gets more expensive, with no end in sight.

"If users had a choice, they'd throw the whole bunch of vendors out right now," says Beggs.

Unfortunately, mainframe customers are a captive audience. A mature mainframe market and limited competition means software vendors have little incentive to change existing — and very profitable — pricing models.

Ironically, while the public and press have focused on whether Microsoft Corp. could use its position to overcharge for software, mainframe customers have long complained that software vendors have been doing just that.

David Ochroch, a contracts manager at the federal Student Loan Management Association (Sallie Mae) in Reston, Va., recently had to threaten to sue one vendor to get it to back down from a huge license fee increase after Sallie Mae linked several of its mainframes into an IBM Parallel Sysplex cluster. The fee hike, he says, was demanded on software that wasn't even involved in the Parallel Sysplex.

Another time, Sallie Mae was forced to drop plans to migrate critical software to a larger system after the vendor said it would assess Sallie Mae a $1 million upgrade fee even if the software usage remained unchanged.

Like all the customers interviewed, Ochroch declined to identify the vendors involved in specific price negotiations. However, he says, Sallie Mae's large-system software costs now consume around 30% of Sallie Mae's data center budget and will push the budget up at least another 15% in four years.

Carl Greiner, an analyst at Meta Group Inc. in Stamford, Conn., estimates that for most corporations, mainframe software costs can range from two to four times the cost of the hardware.

One issue -- capacity-based licenses and maintenance fees — is one of the longest-standing customer complaints in the mainframe world.

Under a capacity-based model, software pricing is based on the overall size of the system — or combination of systems — on which it runs. The more powerful the hardware, the more it costs to run software on it, regardless of how many people use the software, how often it is used or what it is used for.

The issue is particularly urgent now for the following two reasons:

- Today's boxes are a lot bigger than previous models — hence moving any software to them becomes especially costly.
- Current-generation mainframes from IBM, Santa Clara, Calif.-based Hitachi Data Systems Corp. and Sunnyvale, Calif.-based Amdahl Corp. are large enough, cheap enough and powerful enough to let users do the application and data consolidation needed to reduce costs while dramatically improving performance and manageability — all crucial factors in the move to the Web-enabled enterprise. Users say software costs are making it far more expensive than it should be.

"There is no correlation between expense and value," says Kevin Berry, a contracts manager at Wells Fargo Services Co. in Minneapolis. "If you are consolidating workloads onto larger CPUs, there is no added value delivered to each workload, yet there may be an upgrade charge. Why should that be?"

Very often, adding new hardware can nudge users into a higher price band, which means new licenses and new maintenance tariffs — usually 15% of the base software price.

For example, Nabisco recently found itself facing a one-time list price increase of $1.7 million when it decided to move several applications to a system that offered 185 MIPS more than the previous model.

"What's going on is nothing less than a shakedown of customers. ... It's just hostage rates," says Dan Kaberon, Parallel Sysplex manager at Hewitt Associates LLC in Lincolnshire, Ill., one of the nation's largest benefits outsourcers.

"Here's a company that's selling you the same software, the same amount of documentation and the same usage profile suddenly saying we deserve more because IBM sold you more hardware," Kaberon says.

Falling hardware prices and the 30% increase in annual demand for mainframe hardware predicted over the next few years are also highlighting the problem, says Greiner.

Why Change?

At the start of the decade, when a single mainframe MIP cost more than $100,000, nobody noticed software costs. But with an IBM MIP selling at $2,270 today — and estimated to fall to less than $400 by the end of 2003 — software costs have suddenly become very visible, Greiner says.

AT A GLANCE

Mainframe Complaints

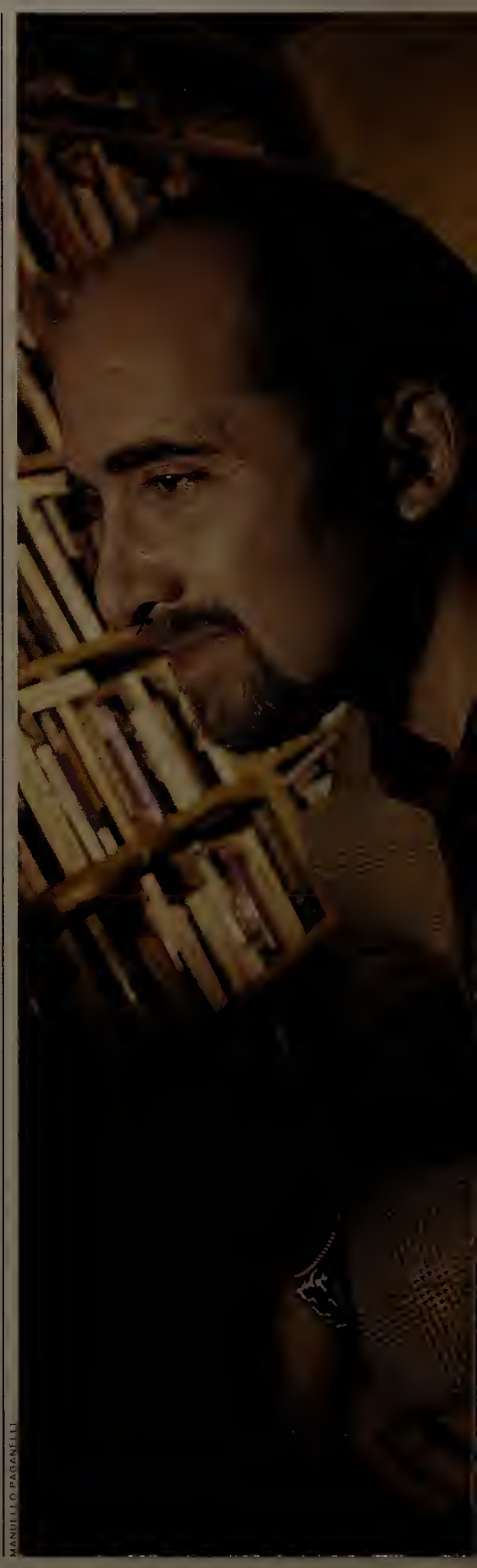
Big iron gets cheaper, but its software gets more expensive

What customers claim: Mainframe software vendors use outdated pricing plans to unreasonably jack up software costs.

What the vendors say: Only a few plan to move to new pricing models.

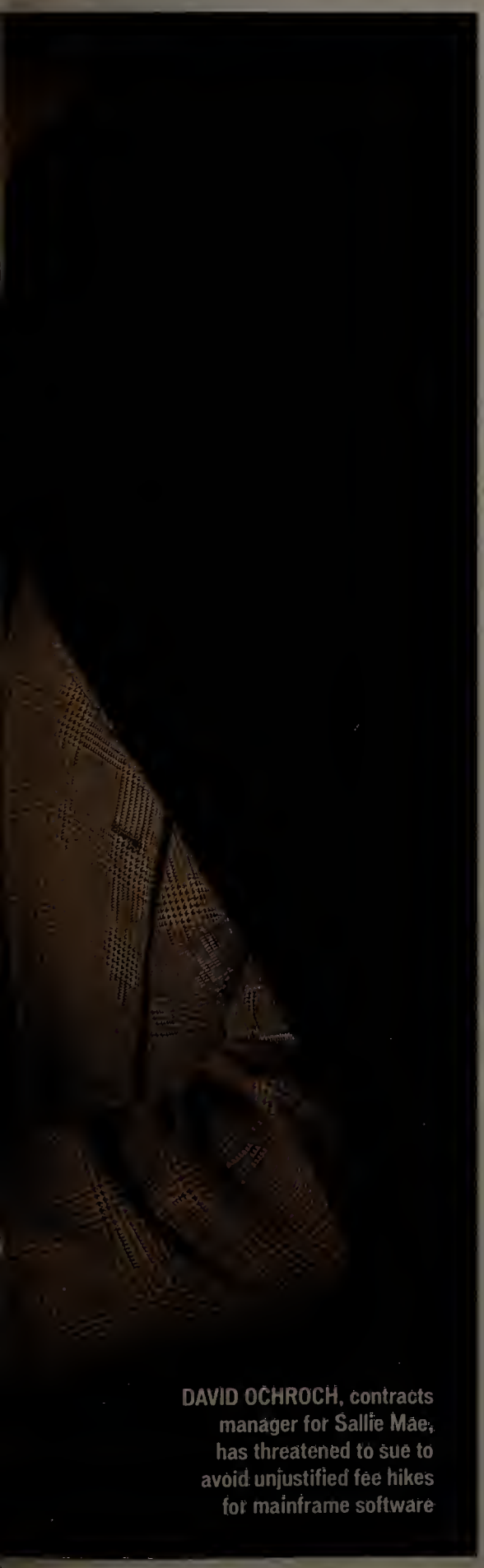
Why don't customers move? Applications may be mainframe-only, or would be too expensive to move to other platforms.

How soon will things change? Not very quickly. Vendors have little incentive to change and few tools measure software usage accurately.



MANUILLO PAGANELLI

Mainframe hardware is cheaper than ever, but software costs keep rising. Customers stuck with legacy applications say they're fed up, but little relief is in sight By Jaikumar Vijayan



DAVID OCHROCH, contracts manager for Sallie Mae, has threatened to sue to avoid unjustified fee hikes for mainframe software

Most of the major mainframe software vendors, such as Computer Associates International Inc. in Islandia, N.Y.; Compuware Corp. in Farmington Hills, Mich.; BMC Software Inc. in Houston; Candle Corp. in Santa Monica, Calif.; and Sterling Software Inc. in Dallas, have little reason to change, says David Floyer, an analyst at IT Centrix, a mainframe and business-process consultancy in Mountain View, Calif.

The mainframe market is mature, and there are limited new markets or first-time users to be won. Almost all the applications still on mainframes are there because they require mainframe power. And few users can afford the expense, resources, time or the disruption of migrating away from mainframes.

Floyer says industry consolidation is limiting choice for users and consolidating too much software in the hands of too few vendors — most notably CA and Compuware, which he says have "a near duopoly."

CA declined repeated requests for comment. Doug Kuiper, a Compuware spokesman, said the company has no plans to change any of its pricing models but refused further comment.

Steve Wright, a marketing manager at Candle, said the company already supports usage-based pricing in some instances.

Next: Usage-based Pricing?

Change is possible, say analysts and users, but it will be slow, painstaking and full of land mines.

One method that's gaining increasing support is usage-based pricing, which typically charges by how much a customer uses the software or how many employees use it.

Its adoption has been slowed, however, by the relative lack of tools for measuring software usage and the management hassles involved in verifying and auditing usage data.

A longer-term concern is that usage pricing could actually be costlier for users if they aren't careful, warns Tom Moore, a marketing manager at mainframe hardware maker Amdahl. With usage models, "if your transactions suddenly double or triple, you are going to have a lot of people suddenly knocking on your door for money," Moore said.

Site Licensing

Users such as Beggs and Ochroch also favor the increasing use of long-term enterprisewide or site licensing models. There are variations here, too. With one model, for instance, users agree to pay vendors a lump sum for the right to use their software in whatever manner they choose — on systems of any size — as long as the total capacity of the hardware complex doesn't exceed a MIPS rating on which the parties agree.

A variation of this model lets users earn a certain number of points by paying a flat amount over a two- or three-year period and then using their software in whatever manner they choose, as long as it stays under the point limit they have purchased.

For example, at $100 per point, a company would pay $500,000 for 5,000 points. The company would then be free to apply the points in moving the vendor's software from one system to another, from one platform to another (such as from an OS/390 mainframe to Unix systems) or from one location to another.

In some cases, points could be applied to the purchase of new products from a designated suite. Vendors that also sell mainframe hardware, such as IBM, have been among the first to change software pricing models because they would be hurt if high software prices cut into hardware sales.

In October 1998, IBM slashed its pricing models from nine categories to two broad categories — one based on capacity, the other on usage.

"We are doing a lot of things in this space. The fact that our systems get larger and larger means we need to make incremental improvements" to licensing models, says Doug Balog, a software group director at IBM. Others, like Amdahl and Hitachi, offer technologies that allow users to slice their mainframes into several smaller physical boxes — each with its own serial number. This way, software vendors charge for software based only on the size of that slice, rather than the entire machine.

Ultimately, says Ochroch, the best protection is knowing what software to wean from a mainframe, knowing when to segregate workloads on different systems, restricting growth on some software and building contractual safeguards that bind vendors to specific conditions.

"This kind of protection goes way beyond the legal ideas of liability and software title warranties," Ochroch says.

FORTUNE

Web Deployments Done Yesterday

Fast reactions, low pricing make Rackspace a viable alternative to internal Web pilots

BY STEVE ULFELDER

A FORTUNE 50 business executive had a Web project going. Or rather, not going. His company's IT department didn't have time to hook up a Web server.

The exec got exasperated, and called Rackspace.com. His project was online by close of business that day.

Graham Weston, CEO of San Antonio-based Rackspace, says he can't identify the executive, but it's certainly a familiar story. It's also a story tailor-made to illustrate the knight-in-shining-armor role he says Rackspace plays.

Speed and flexibility in Web server deployment are key Rackspace selling points. The company appears to be a good bet as a Web server outsourcer in its intended market — small to midsize businesses — but it may have a place serving large information technology organizations as well.

The idea: Businesses that need a Web server quickly can call Rackspace or hit the company's Web site, *www.rackspace.com*, and roll their own. At the Web site, you can spec out your operating system, processors, memory, bandwidth and support needs. Then you can instantly check out lease rates. Rackspace.com views this as a differentiator. "We're trying to productize this [process]," Weston says. "This is not a consultancy."

Indeed, competitors such as Beltsville, Md.-based Digex Inc. and Andover, Mass.-based NaviSite Inc. don't quote prices online. But they offer a broader range of services — including application hosting and co-location — in addition to Web server outsourcing.

According to Cambridge, Mass.-based Forrester Research Inc., Rackspace.com's slice of the Web hosting market was about $152 million at the end of 1998 and will grow to about $5.3 billion in 2003.

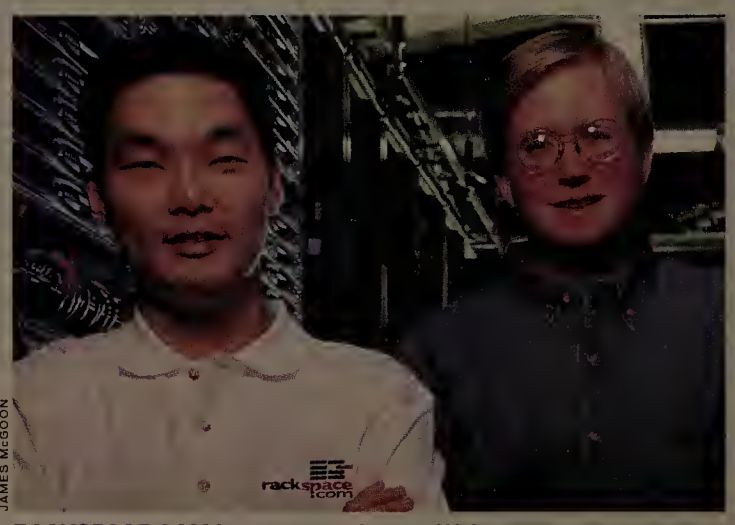
Richard Yoo, Rackspace.'s co-founder and chief technology officer, says the company viewed top-notch equipment as a cost of entry.

Rackspace offers redundant network connectivity as well as Cisco Systems Inc. networking gear and Sun Microsystems Inc. hardware. It supports Solaris, Linux, Windows NT and Cobalt. Linux is its specialty.

Yoo says one frequently asked question is: How does Web server outsourcing differ from co-location? George Peabody, an analyst at Aberdeen Group Inc., says co-location vendors such as Santa Clara, Calif.-based Exodus Communications Inc. have "got a network, and they're leasing out well-connected physical space." Increasingly, Exodus is offering services as well — and it's reasonable to expect others to elbow into Rackspace.com's area. "The large guys are going to go downmarket toward them," Peabody says.

But for now, analysts say Rackspace.com stands out by offering notable service at a low price. Rackspace.com customers' average monthly tariff is between $500 and $1,500, Weston says.

"Service at those price levels is a differentiator," Peabody says. He says Rackspace.com boasts significant "operating system-level expertise . . . good network design and a good methodology for the care and feeding of servers."



RACKSPACE.COM hopes to productize Web server oursourcing, says CEO Graham Weston (right), pictured with Richard Yoo

Rackspace.com

Location: 112 E. Pecan, Suite 600, San Antonio, Texas 78205
Telephone: (210) 892-4000
Web: *www.rackspace.com*
Niche: Web server outsourcing
Why it's worth watching: If you have sudden site overload or an immediate demand from a business unit, Rackspace.com can get a Web server configured just the way you want it in 24 hours.
Company officers:
• Graham Weston, CEO
• Richard Yoo, co-founder and chief technology officer
• Morris Miller, chief operating officer
Milestones:
• 1996: Founded as Cymitar Network Systems
• 1998: Name changed to Rackspace.com
• October 1998: Introduced first product
• 1999: Became profitable
Employees: 55 as of December. That's up from 10 in June, and growth is expected to continue.
Burn money: In December, raised $6.3 million in second round of funding from several private investors and two venture funds: Isom Ventures and Teton Capital Co.
Customers: Formula1.com (Web site); Bleem.com (Sony PlayStation emulator); Netwhistle.com (Web monitoring service)
Partner: Cobalt Networks Inc.
Red flags for IT:
• Rackspace's key asset – a laser-honed focus on fast Web server outsourcing – may hamstring its growth in other potential areas. In competing against companies with broader ranges of services, Rackspace.com may find itself perpetually fighting a multifront war.
• With most of the millennium woes behind us, corporate information technology managers just may find more time to do those pesky Web pilots that have been waiting on the back burner.

COMPUTERWORLD emerging companies

Service Comes First

Service was the convincer for Formula1.com. The London-based auto-racing Web site was looking for three things in a Web server outsourcer, according to CEO Nicky Morris. First, the company needed reliable uptime. Second, the price had to be attractive. Finally, quick turnaround on requests for additional boxes was vital.

The third criterion was the persuader because Formula1.com ramps up and down quickly. "Rackspace can turn around a new order for a Linux box to our specifications within 24 hours," Morris says.

Another frequently asked question: Do I get admin access to my server? "Yes, they get complete root access," Yoo says. "They can erase a drive if they want."

Rackspace.com may be on to an interesting idea for midsize companies. If your business is large, its service isn't, for the most part, aimed at you.

"The Fortune 100 is not their market," Peabody adds. However, he says, "they'll have Fortune 100 data on their servers" because many systems integrators outsource to Rackspace.

And even Weston concedes that "co-location is great for folks who have a very large site and an administrator to run it."

Peabody says he believes that the corporate need to work at Internet speeds may be Rackspace.com's ally. "If your IT folks are jammed," he says, "you can't afford to wait. The Net beats a relentless drum." ◗

[the buzz]
STATE OF THE MARKET

"Half our customers are outside the U.S.," says Rackspace.com CEO Graham Weston. Rapid global growth makes sense, as "high-bandwidth sites are expensive to host in Europe," according to Formula1.com CEO Nicky Morris. But it also opens the door for a lot of competition, especially in Europe.

Aberdeen Group's George Peabody considers this worldwide growth a validation of Rackspace.com's business model. But some analysts say that as the company grows and eventually establishes data centers overseas, selecting the right partners will be crucial.

Rackspace.com keeps a close eye on Data Return Corp., which went public in October and has watched its stock rise since its initial public offering. Data Return is Microsoft-only; Rackspace.com supports Solaris, Linux, Windows NT and Cobalt.

But Rackspace clearly considers Linux its specialty. "We have the largest installation of Linux servers under management in the world," Weston says. And what of NT? "We love NT. We'll support legacy systems for a long time," he jokes.

The Competition

AboveNet Communications Inc.
San Jose
www.abovenet.com
Broad range of co-location and service offerings

Data Return
Dallas
www.datareturn.com
Provides Microsoft-only Web and application hosting

Digex
Beltsville, Md.
www.digex.com
Co-location and Web site management, with strong service focus

Digital Nation (a Verio Inc. company)
Alexandria, Va.
www.digitalnation.com
Server and application hosting

Exodus Communications
Santa Clara, Calif.
www.exodus.com
A co-locator that offers broad range of hosting and outsourcing services

NaviSite
Andover, Mass.
www.navisite.com
Nominally an application service provider, NaviSite also serves as a co-locator and server outsourcer

– *Steve Ulfelder*

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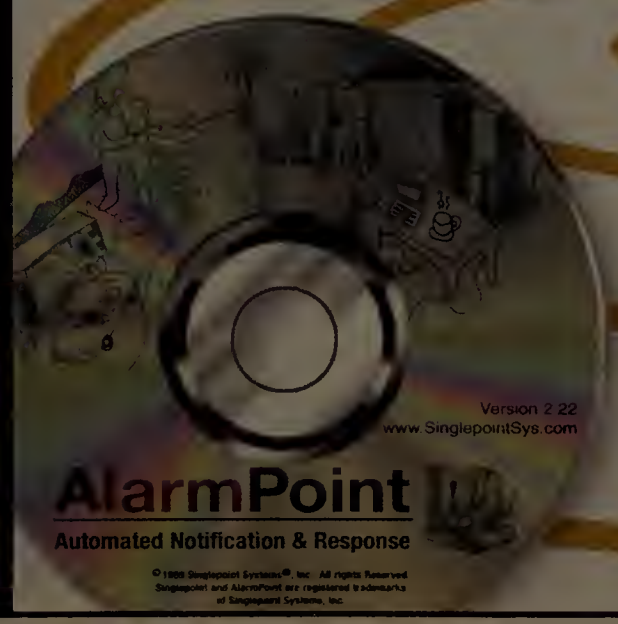
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Strategist of the Net

WHO: Patrick Wilson
COMPANY: Sprint Paranet, an information technology consulting firm in Houston
PREVIOUS TITLE: Network operations manager
REPORTS TO: Chief technology officer
SKILLS FOR THE JOB: Tact, negotiation, analysis, project management and change-management
TECHNICAL: "That's the problem with this position. You have to do everything."
MOST IMPORTANT TIP: If you're working with a dot-com start-up, you must know how to build business processes on the fly.

BY DEBORAH RADCLIFF

DAY TWO has dawned in the world of e-commerce. On this day, companies want their Web efforts to generate profits and blow away the competition. Rising to the occasion is the Internet technology strategist, a new breed of techie that can take responsibility for end-to-end development of competitive electronic-business processes and applications. This job isn't for the weakhearted, but, if done right, it could lead to the richest position of all: chief technology officer.

Temperament: Diplomacy and strong analytical skills are paramount. In one instance, Patrick Wilson, Sprint Paranet's Internet technology strategist, stepped into a Web development project midstream. The client had just bought a retail store and wanted to build a grandiose Web site. "I had to come up with the Web site business flow from the consumers' and the business' perspective," Wilson says.

Before he proceeded, Wilson backed up and asked the client some tough questions:

- What must happen from a buyer standpoint? How does the user find, check out and buy products?
- How do we as a business want to process these orders?
- How do we want to tie these into a back-office system and fully automate it?
- How do we want to handle customer relationship management?

Biggest challenge: Wilson's biggest challenge is customers changing their minds midstream. "Every client thinks they know what they want," he says. "But the life of a Web site is a moving target. I often hear, 'Wait. We changed our minds.'

"Web projects are constantly evolving. That's the problem with Web stuff — you know it can always be better. But you have to draw a line in the sand and roll out the project in versions by asking the client, 'What are the requirements you'd accept to get the product out by this date?' "

Managing change: Often, clients say they want certain changes "no matter what it takes," Wilson says. These changes often push deadlines back. When deadlines aren't met, the clients conveniently forget the changes they ordered.

Wilson handles it this way: When a client comes to him with new "ideas," he mirrors back to the customer: "This is what you want. This is what's involved in making this change. This is how long it will take. Would you like it now or in the next version?"

Business-process planning: Wilson's current project is with a dot-com start-up. But dot-coms don't have any business processes, so they build them on the fly. And they change — a lot — which means Web development starts and stops in fits. "Right now, our client's business processes are changing a lot in the middle of the project. We thought we were going to have *x* amount on this side of the business, but we found out we had *y*, so now we have to redesign the business process to interact with *y*," Wilson says.

Biggest break: While developing a site for the largest model-train store in the world, Wilson had to rebuild some "very archaic" internal processes. The company wanted to put its entire catalog on the Web, for which Wilson did the coding while at the same time setting up the business rules.

"It was hard to build a calculator for shipping costs when no one knew how much a train model weighed," Wilson says. He later helped the company change its shipping and weighing processes, as well as other business processes, into a fully automated system. "Now the company uses more advanced technology, and their Web site is truly dynamic," he says.

Outlook for career: Barring the demise of the Internet, the still-evolving job of the Internet technology strategist will be in high demand for many years to come. Marketers like the The GAP Inc. in San Francisco and AnnTaylor Stores Corp. in New York all need to get their sites running competitively online, says Lina Fafard, a contract technical recruiter in Redondo Beach, Calif. The next evolution of the position: "Support for the front-end customer," Fafard says. "Whatever you do, support that front-end customer. That's the next technical critical edge." ◗

Radcliff is a freelance writer in Santa Rosa, Calif.



AS AN INTERNET technology strategist, Sprint Paranet's Patrick Wilson needs to blend technology and people skills

Just the Facts

DRIVING FORCES: The U.S. economy is transforming into an Internet economy, says Ben Sabrin, technical recruiter at Pencom Systems Inc. in Atlanta. Large brick-and-mortar companies are trying to become "click and mortars," and dot-com start-ups are proliferating wildly. All need Internet technology strategists to make them competitive in this new medium.

JOB DESCRIPTION: This person should keep abreast of the latest tools and technologies, while keeping in mind the company's unique set of business circumstances. The strategist will oversee integration of Web reporting, workflow, e-mail tracking, streaming media content, integration and security processes.

SPECIFIC SKILLS:
- Project management experience
- The ability to strategize in a nontechnical way with multiple business units
- Strong analytical skills
- The ability to suggest changes for existing business processes or for building new ones
- The ability to provide competitive analysis
- Flexible to changing strategies midstream, if necessary
- Programming and development skills

CAREER PATH: Systems architects make excellent candidates because they know how to evaluate competing technologies and deliver successful solutions, Sabrin says. Project managers can also migrate into strategist positions for the same reasons, adds Sprint Paranet's Patrick Wilson.

CAREER POTENTIAL: After a proven track record of making companies successful in the electronic-business world, an Internet technology strategist is ripe for the position of a chief technology officer or CIO at a dot-com start-up, says Sabrin.

SALARY RANGE: $85,000 to $105,000, depending on the location and company. Large brick-and-mortar retailers often pay more, while dot-com start-ups pay less. But remember: Start-ups mean initial public offerings – and the opportunity to build brand-new infrastructures from the ground up.

SOURCE: MONTGOMERY WEST, AN EXECUTIVE SEARCH FIRM IN SAN JOSE

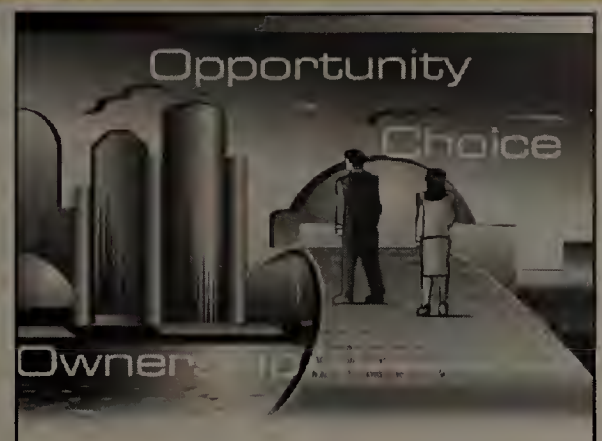
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Systems Specialist

Research, analyze, design, program and maintain moderately complex to complex mainframe Claims and Corporate systems using COBOL, CICS, VSAM, JCL, SQL, FOCUS, Microsoft Access, Lotus 1-2-3, DB2 and TELON; analyze software specifications and determine applications' requirements and constraints; utilizing knowledge of Claims operations, evaluate Claims business processes and recommend/ design new systems solutions; use mathematical modeling theory and techniques to predict outcome and consequences of design; develop systems documentation and user guides; provide technical expertise to users and development team; participate in special projects as required. Requirements: B.S. Computer Science or Mathematics (or academic/experiential equivalent) and 2 years of experience as Applications Programmer I or Applications Programmer I/Claims Management Information. Hours: 37 1/2/week. Salary: $50K/yr. Interested applicants apply at your nearest Job Service office or submit resume to: Job Service, 500 W. Trade Street, Charlotte, North Carolina 28202. All resumes must include a Social Security number and refer to Job Order # NC2623463 and DOT code 030.062-010

Senior Analyst – Emerging Technologies

Direct & perform activities related to the access & dissemination of electronically managed information among company business units & product groups, vendors & business associates, with emphasis on the leveraging of new & emerging communication technologies.

Duties include: serve as liaison between company & information sharing business partners, coordinating information sharing systems development, enhancement & problem resolution; provide direct, ongoing support for installed external information sharing programs; recommend new & enhanced external information sharing processes, providing sufficient technical documentation of evaluations & recommendations to facilitate system development & installation; manage development & implementation of approved projects; provide business information system program planning, design & analysis; advise executive management of information sharing opportunities; coordinate information sharing, providing uniform approaches to system architecture; analyze proposed projects in terms of cost/benefit feasibility; document potential changes to operating envelope; maintain knowledge of business practices & IS technologies; manage the activities of systems development project teams.

Required: B.S. or equivalent in Comp Sci or related and 1 yr exp as a Systems Analyst. Send resume to: Andrew Corporation, 10500 W. 153rd St, Orland Park, IL, 60462, Attn: J. Ceresa or e-mail to Janice.Ceresa@andrew.com EOE

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Software Engineer: Design, evaluate and develop tools and methods used for product testing; provide coordination between U.S. and European company to ensure a consistent test environment; ensure that European methodologies and requirement interpretations are consistent with the requirements of the new Insight development environment; design, implement and execute the automated verification procedures; application development team, design and develop application based programs using QA partner; design test target hardware configuration in conjunction with test design.

Associate degree in Electronic Technology required. One year experience in the position or one year as a Software Specialist &/or Software Engineer required. Related occupation must be in electric energy management industry.

40 hrs./wk.; 9:00a.m.-5:00p.m.; $55,092/year. Must have proof of legal authority to work permanently in the U.S.

Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street-7 North, Chicago, Illinois, 60605. Attention: Brenda Keily, Reference Number V-IL-20443-K. NO CALLS.



Programmer Analyst

Programmer Analyst who has at least 1 year of work experience and a Bachelor's Degree. Experience with one or more of the following; Oracle, SQL, PL/SQL, Developer 2000.

Good written and oral communication skills required.

Email resumes gibsonle@cdm.com

PowerBuilder/ MS-SQL Application Developers

INDEPENDENCE INVESTMENT ASSOCIATES, a Boston-area investment firm engaged in institutional money mangement, has an immediate need to fill a range of PowerBuilder / MS-SQL Application Developer positions relevant to our business. Thesa positions will be responsible for some or all phases of customized software application development in support of the Company's investment management-related services.

- Education required is a Bachelor's-level degree (or equivalent) in Computer Science or similarly relevant field
- Experience required is three (3) to eight (8) years (depending on level of position sought) involving all phases of structured software application development and support.
- Minimum basic skills required for all positions is the demonstrated ability to utilize PowerBuilder and Microsoft SQL Server in the development process.
- More senior level positions additionally require the demonstrated ability to introduce new techniques, technologies, systems, and project management skills to the application development process.
- Starting salaries range from $60,000 to $125,000 per year, together with fifteen (15) days paid vacation, medical and life insurances, and other industry-competitive benefits.

Respond with resume only to: Ms. Frances Fitzgerald Brian, Senior Vice President, Systems & Operations, Independence Investment Associates, Inc., 53 State Street, Boston, MA 02109. An EOE/M/F/H/V

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Principal Software Engineer

Design and develop distributed computing client/server based applications within Windows and UNIX environments. Design and code 32-bit Microsoft Windows-based GUIs. Work with ODBC, SOL, Triggers and stored procedures using database systems. Work with cross platform software development on Unix platforms. BS (comp sci, rel field/equiv) and 5 yrs exp. (or 5 yrs exp as Software Engineer). 40 hrs/wk. Send resume to Human Resources Department, Siva Consultancy Services, Inc., 83 Second Avenue, Burlington, MA 01803.

Programmer Analyst (multiple openings) to plan, develop, test & document computer programs; & use 1 or more of the following: Visual Basic, MS Access, Windows NT &/or Windows 95; Reqs. Bachelor's in Comp. Sci., Systems Analysis, Comp. Info. Systems, Comp. Engg., Electrical or Electronic Engg. or Math or its foreign educ equiv plus 1 yr exp in job offered or 1 yr related exp as Programmer, Programmer Analyst, Systems Analyst, S/ware Engr or Consultant; $56,500/yr, 40 hrs/wk, 8a-5p. Send resume or CV to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila, PA 19123, J.O. #1029273

Database Administrator

Participate in the physical and logical database design. Install and upgrade ORACLE RDBMS and related components. Manage ORACLE RDBMS server and its objects; monitor database growth and disk space activities. Provide uninterrupted database access for the mission critical enterprise application with Backup and Recovery Implementation. Maintain security for ORACLE RDBMS, configure, tune and optimize database; study and test new software releases and new product/tool evaluations. Develop system, application and database wide standards and policies. Responsible for application tuning, data modeling and data mapping. Install, maintain and monitor the ORACLE web server and monitor the web server, administrative logs and provide assessment of database impact and operational support. Knowledge of Oracle, SQL*DBA, SOL*Plus, Exp/Imp, PRD*C, PL/SOL, C, COBDL, PowerBuilder, Visual Basic, UNIX, Sun Solaris, HP-UX, DG/UX, VAX/VMS, Netware, Windows, Sun Sparc, HP 9000, DG Aviion, and IBM PC. M.S. in Computer Science and 1 year experience OR 1 year experience as a Sr. Software Engineer. M-F, 9-5, 40 hrs/wk., $70,000 per year. **Send 2 resumes to Case #19982994, P.O. Box 8968, Boston, MA 02114.**

Systems Analyst to analyze, design, develop and implement System Application Product (SAP) in client server and mainframe environments using Advanced Business Application Programming (ABAP/4), Oracle, Visual Basic and object-oriented programming in Unix environments; Map and configure requirements and re-engineer business process to SAP structure using EDI, ALE, BAPI, SAP Script, Screen Painter and SAP Basis; Develop Internet Application Components (IAC) using ABAP/4, HTML and Active-X Controls. Require: B.S. degree in Computer Science, Electronic and Communication Engineering, or a closely related field, with one year of experience in the job. Extensive travel on assignments to various client sites within the U.S. is required. Salary: $60,000 per year, 8:00 am to 5:00 pm, M-F. Send resume to Saravana Swaminathan, President, Excel Corp. (Bellsoft), 3545 Cruse Road, Suite 309-G, Lawrenceville, GA 30044; Attn: Job KR.

The Computer Consultants USA, Inc. needs experienced professionals in the following positions:
Sr. Data Architect Analyst/ Administrator to design, develop & implement logical, physical design & reverse engineering using ERWin logic works, PowerDesigner/Designer2000. Create & manage middleware using Tuxedo TP. Excellent ability to create & maintain MS SQL Server, Oracle 8i/80LTP, OLAP, hot standbys, multiple distributed replicas & VLDB on AIX, HP-UX, UnixWare, NT, SunOS/Solaris. Korn, C shell & PERL scripting is a must. Exp. in backup/ restore of critical dbs using SQL backtrack, ARC Serve & Enterprise backup utility. Performance monitoring & tuning using tkprof, SQL trace facility, OEM, Oracle monitor suite. Configure & maintain networking, connection pooling & multiplexing using net8/sql'net & Oracle connection manager. Web experience in Oracle Web application server & IIS4 and programming exp. in VB, C++ (OOP), developer2000 is preferred; MS Comp Sc or Elect. Engg & 1+ yrs hands-on exp required; $58,000-65,000/yr.
Software Engineers (multiple openings) with expertise in bi-to-multi-directional algorithms, Pattern Recognition, ATM communications, Robotics, OOAD, Neural Network model & Genetic Algorithm applications, Robotics, Data Compression, CORBA, Make, QrbixWeh, BEA M3, Java, Visual Aged & Rumbaugh notation, Lotus Notes, Unix SMTP or D/nix, Oracle Applications 10.7 NCA, Application Object Library 10.7 + Chain Link Object Migrator, C, Pro'C, HTML, Reflection, FTP, Telnet, ASP,Active X Controls, DHTML, Prolog, Smalltalk, Visual Age Smalltalk, Visual Works, Visual Smalltalk, Procedure Builder, Min. 1 yr. exp. or equiv. reqd. $59,000- 70,000.00/yr.
Software/Network Engineers (multiple openings) with skills in high-speed data network, distributed computing, WinNT Servers & workstation, DHCP, DNS, IIS, J++, Lotus Notes, Linux, TCP/IP, Arcserve, Craft Interface, IPX/SPX, protocols, Visio, ProComm Plus, Newbridge Multiplexer 3645 High Capacity Bandwidth Manager, ACC Amazon Routers, & CCIVIIS. Min. 1 yr. exp. or equiv, reqd. & $59,000-65,000/yr.
Sr. Systems Analysts (multiple openings) with expertise in MPE XL, ALLBASE, PRO- C, ICLM K-1025, UNIFY, C, NELCO F-20, Bachman XTRACT Platinum Toolset, BMC Toolset, VS-COBOLH, COBOL370, QS/JCL, PL/I, IMS DB/DC, TSOfISPF, PRO-EDIT, Roscoe, SQA Manager, SQA Comparators, Mercury Interactive Willrunner. Min. 1 yr exp. or equiv. reqd. $58-65,000/yr. Fax resume: (732) 438-8704 or e-mail to tvravi@tccusainc.com

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Visual Basic, ASP, ActiveX, COM, DCOM, MTS, MSS

MQSeries, Tuxedo, VITRIA, NEDN, MSMQ

System level programming with Unix/NT internals, C, C++

In addition, experience in Finance and Insurance sectors is desirable.

Multiple positions open countrywide, should be willing to relocate. We offer an excellent compensation package and comprehensive benefits. If you have what it takes, please send your resume to: The Recruiter, Hexaware Technologies Inc. 5 Independence Way, Princeton, New Jersey 08540 Fax: 801-469-5908
E-mail: careers@hexaware.com

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Networking Engineer (multiple openings) to design & implement wide area networks using Cisco routers 2000 & 4000 series; configure firewall & implement network security & performance; troubleshoot network related problems using Sniffer & LAN analyzer; configure & maintain Windows NT networks; & provide technical solutions for messaging operations. Reqs. Bachelor's in Comp. Sci., Systems Analysis, Comp. Info. Systems, Comp. Engg., Electrical or Electronic Engg., Electrical & Electronics Engg. or Math or its foreign educ equiv plus 2 yrs exp in job offered or 2 yrs related exp as Programmer, Programmer Analyst, Systems Analyst, Networking Engr., S/ware Engr. or S/ware Consultant; $60,550/yr, 40 hrs/wk, 8a-5p. Send resume or CV to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila, PA 19123. J.O. #5029177

Sr. Software Engineer/Systems Architect:

Design and implement systems based on Business Process Analysis and client requirements. Conduct joint application development session to gather requirements based on business requirements and system architecture. Dellver high level design document. Architect, develop and implement all phases of an application. Install and implement application at client site.
Knowledge of: Microsoft Visual Basic, VBScript, Access, Visual C++, UNIX Bourne Shell, HTML, FoxPro, Dbase, Assembly and PowerBuilder. A.S. or Foreign Equlvalent in Computer Sci./Eng. and 2 yrs. exp. OR 2 yrs. exp. as a Software Eng. M-F, 9-5, 40 hrs/wk., $68,000 per year.

Send 2 resumes to Case # 19982891, P.O. Box 8968, Boston, MA 02114.

Software Engineer

(Altamonte Springs, FL). S/w devel. (90% of time): X Window servers & X Window apps; porting X11R6 & other X Window ports to newer products while working on X Recorder; writing X Window server code, X Window app. programs & UNIX shell installation scripts for new s/w releases. Sys admin (10%): handle backups, maintain user accounts, install s/w, respond to user probs, both on UNIX machines & PCs, & perform tech support duties when need arises. M.S. in EE, Comp. Sci., or sim, & have 4 mos exp in, or have completed 1 university-level course in (or a major academic project requiring extensive use of) each of: C, UNIX, shell scripts, X server & Xlib, UNIX networking, 2D & 3D computer graphics, digtal & analog electronics, Assembly, & Forth code. Excellent communication skills req'd $45,000/yr. 40hrs/wk, 9am-5pm.
Send resume to Dept. of Labor/Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302-0869.
Refer to J.O.#FL-2027064, DOT Code 030.062-010.

SENIOR SOFTWARE ENGINEER

to provide on-site software consultancy to analyze, design, develop, test, implement and support business application software using Open VMS 7.1, HP-UX 9.0, DCL, UNIX Shell Scripts, DECFORMS 2.2, CMS, MMS, Oracle 8.0.5, Sybase System 10, C, Pro*C with Efmbedded SQL, SQLPLUS, PL/SQL 2.0 in DEC-Alpha Server and HP Server environments; design and develop real-time application using Open-VMS, C and Oracle 8.0.5; conduct software quality testing. Require; M.S. in Computer Science/Mathematics(or equivalent) and two years experience in the job offered or as Programmer/ Analyst or any experience providing the above described skills (B.S. or equivalent with five years progressively responsible experience may be substituted for M.S. degree). 40% travel required to client sites. Salary: $65,000 per year, 8:30 am to 5:00 pm, M-F. Mail resume to President, YASH Technologies, Inc., 2100 Parklake Drive, NE, Suite F, Atlanta, GA 30345-2167.

Software Engineer to design, develop, test implement and maintain Advanced Business Application Program (ABAP) interfaces and conversions in a client/server environment using ABAP, Oracle, PROGRESS, DBase and object oriented programming under Unix, OSF/1, AIX and Windows NT operating systems; Map and configure requirements to SAP in data processing and re-engineer to SAP organizational structures using ABAP/4 Workbench, SAP script, Screen Painter, Menu Painter, EDI, ALE, data conversion and BASIS with programming languages such as ABAP, C, C++, CICS, MVS/ESA, JCL, DB6, PROGRESS, Foxbase, Pascal, Clipper and Shell in client/server environment. Require: M.S. degree in Computer Science, or a closely related field, with one year of experience in the job offered. Extensive travel on assignments to various clients sites within the U.S. is required. Salary: $65,000 per year, 8:00 am to 5:00 pm, M-F. Send resume to Saravana Swaminathan, President, Excel Corp. (Bellsoft), 3545 Cruse Road, Suite 309-G, Lawrenceville, GA 30044; Attn: Job JK.

Sr. S/W Eng'r:

Research dsgn, devl'p & test power bill'g sys. applic'n w/ SmallTalk, Visual Works 2.5 & GemStone 4.1 obj.-oriented relat'n'l db engine; Plan/direct sftwr eng'r to devl'p/implem't OODB applic'n w/PowerBuilder, Power-Tool, PowerFrame & Oracle/Sybase on Unix/PC; Deploy opt'z/ convert db server from main'F to IDMS Nwk; Implem't multi-platfm client/ server info sys. 40h/w, $74k/y, 8-5, MS in Comp. Sci., 4 yr in s/w posit'n w/ SmallTalk & Gemstone. Resume to Bureau Wrkfc, PO Box 10869, Tallahassee, FL 32302 Re: Job#FL-2028622

Computer
Mini-Micro Supply

Mini-Micro Supply, a nationwide computer distributor, is seeking a Network Engineer for its East Coast operations in New York City. Req. Bachelor's in Comp Sci or Engg & 1 yr exp analyzing, dsgng & dvlpg for LANs and WANs under TCP/IP & dvlpg program using C++. Response to: H.R. Mini-Micro Supply Inc. 40-22 College Point Blvd. Flushing, NY 11354

S/W Consul't:

Dsgn, devl'p & maint'n military invent'y mgt sys. w/ Powerbuilder 5/6 (PB) & MS SQL Server 6/Sybase Sys 11 in client/server; Provide PB train'g monitor'g & co-devlp't for clients; Adm. sys. applic'ns w/ Sybase 11 on Novell Netware 4.1; Work alone at client site/lead devlp'g team in-house to dsgn DB models, opt'z db mgt w/Sybase & train users on db mgt. 40 h/w, $50k/y, 8-5, BS in Electro. Eng'g, 1 yr in job/3 yr in s/w posit'n w PB/ Sybase/SQL Server. Resume to Bureau Wrkfc, PO Box 10869, Tallahassee, FL 32302. Re; Job#FL-2029473

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Programmer Analyst sought to analyze, design and program customized software that provides functions specific to state government child support on IBM mainframe using TELON, COBOL, DB2 and IMS. Design and program software to provide computer-based training and multimedia functions using MULTIMEDIA TOOLBOOK. Required: Bachelors degree or equivalent in computer science or engineering plus three years of experience in the job offered. M-F, 8-5; 40hrs/wk. Salary $37/hr. Submit two copies of resume to: Mike Brooks File #C101156; DWE-ALC; PO Box 7972, Madison; WI 53707-7972. Reference file #C101156.

SAP Software Consultant- 40 hrs/wk,: 8am. - 5 pm. Salary: $130,000.00. Design, customize and implement SAP software to meet client's requirements and/or specifications. Create and write programs to accomplish client's objectives. Advise and provide support to client's current software system and business processes. Application by Resume only. Bachelor's Degree in Engineering, Mathematics, or Science required. Mail Resumes To: ATTN: Mr. Jim Shimanda/ Ms. Debbie Owen, Tower 2, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117. Refer to Job Order # CO4643014.

Baan Software Consultant- 40 hrs/wk,: 8am. - 5 pm. Salary: $92,600.00. Design, implement and customize Baan software. Review clients' existing systems and process to assess client's needs and requirements. Understand client's specifications and requirements. Application by Resume only. Bachelor's Degree in Engineering, Mathematics, or Science required. Mail Resumes To: ATTN: Mr. Jim Shimanda/Ms. Debbie Owen, Tower 2, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117. Refer to Job Order # CO4643014.

Committed to Quality and the People who Provide it. Osaga is a technology solutions company growing on a national scale, pointed toward growth and opportunity. We are recruiting experienced IT Professionals for our Chicago and Phoenix offices with at least one year experience in the following areas: JAVA Software Development: Sun Systems Engineering - Systems Engineer position: Network Security: Network Engineering: E-Commerce solutions. Our associates efforts are rawarded with a competitive pay structure, a unique bonus program and stock options. For immediate confidential consideration, please forward your resume with compensation expectations to: Osage Systems Group, Inc., Attn: Michelle Schnieders, 1661 E. Camelback Rd. Suite 245, Phoenix, AZ 85016

Systems Analyst (Development): Creates, develops, modifies, and implements various relational database software for implementation into an operating system by determining the appropriate integration procedures to insure that the date can be accessed both locally as well as networked in a client/server environment. Establishes appropriate system implementation which will allow operating systems to function on the Internet by developing the appropriate JAVA language and Internet tools for appropriate integration purposes. Develops appropriate graphic user interfaces using C or FoxPro language for the creation of customized modules based upon individual needs of end user including the development of data structures within system parameters for seamless integration purposes. Requires Master's degree in Computer Science. Education to include completion of a project in the implementation of software in an internet environment using JAVA and one project using FoxPro and C for database implementation. Hours: 8:00 a.m. – 5:00 p.m. 40 hours per week at $45,400.00 per year salary. Two copies of resume to: Mike Brooks, File #C100972, DWE-ALC, P.O. Box 7972; Madison, WI 53707-7972.

Manager - Database Administration.

Oversee dvlpmt, organization, & tech strategy of global d/base envrmt; lead & assist during dsgn, dvlpmt, implmtn & performance & tuning of d/base applics; dvlp & monitor DB2 stds & d/base security; oversee backup & recovery of DBMS; provide advanced troubleshooting & tech systms support for DBMS; recruit & train DBA staff. BS in Comp Sci or related field or equiv edu & exp + 3yr exp in job offd or in related occupation such as D/Base Admin or similar duties under different job title. 5yr exp working w/DB2 in DB2/OS390 envrmt & w/other DBMS such as SOL server & Oracle; IBM mainframe envrmt exp using JCL, TSO, CICS, SDSF; exp working in C/S envrmt assessing DBMS; exp defining & implmtg technical directions in a computing envrmt. $70K/yr. 40hr/wk. Must have proof of legal auth to work in US. Send your resume to IA Workforce Ctr, 215 Keo Way, Des Moines, IA 50309-1727. Please refer to JO# IA1100989. Employer paid ad.

Senior Programmer/Analyst sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. At a senior level, engage in full-cycle software development. Specifically, design & develop client/server & web-enabled distribution software applications, using proprietary case tools. Analyze requirements. Create designs & design documentation. Code, test, & de-bug the software applications. Use programming language C & Java Generators in the design & development process. Requires Bachelor's or foreign equivalent in computer science or related field (including electrical & communication engineering); working knowledge of full life-cycle software development, case tools, & web-enabled software applications. 8am-5pm, M-F; $59,600/year. (2 openings.) Respond to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order #CO4644365

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Programmer/Analyst sought by company in Denver, CO specializing in business software solutions. Under close supervision, engage in moderately complex tasks regarding the design & development of customer relationship management software applications that interface with a variety of relational database management systems. Analyze requirements. Create designs & design documentation. Code, test, & de-bug the software applications. Use proprietary CASE tools & programming language C in the design & development process. Requires Bachelor's in computer science, computer information systems or related field; 1 year exp. designing& developing customer relationship management software that accesses relational database management systems using CASE tools & one year experience using programming languages C. 8am-5pm, M-F; $49,500/year.(2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order #CO4644384.

Financial Software Analyst sought by software consulting service in Westminster, CO to work in Westminster & other unanticipated job sites in the U.S., to provide quality assurance for financial & accounting software systems. Develop test plans, test scripts. & implement & verify test results. Analyze software systems to ensure that they are consistent with generally accepted accounting principles & with client needs. Test software systems on UNIX & Windows NT operating systems, & on client/server architecture. Work with Oracle & Microsoft Access databases, using Visual Basic & Oracle Developer 2000 programming languages, & SOA Suites. Requires Master's in Accounting or related field; working knowledge of Visual Basic & Oracle Developer 2000 programming languages, UNIX operating systems, & SOA Suite. Working knowledge of providing quality assurance for accounting &/or financial software systems. $59,700/yr; M-F; 8am-5pm. (2 openings) Respond by resume to James Shimada, CO Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202, & refer to Job Order No. CO4644248.

Software Engineer

(Lafayette, CO) - Bachelor's degree or equivalent foreign degree in Physics or Computer Science. 1 yr. exp. in job offered. The following duties are performed under supervision and are closely monitored. Analyze user requirements for software development. Design and develop software solutions for laser engraving, cutting and welding systems. Utilize physics based methodologies including formulas and theoretical calculations to design laser machines. Construct and debug computer programs. Integrate and test software modules. Develop business solution and prototype for laser machines. Visual C++, C++, Assembler and Pascal. Evaluate interface between hardware and software. 40 hr. wk. Salary 48,215 per year. Application by resume ONLY to Colorado Department of Labor & Employment, Attn.: Jim Shimada, Office of Employment Programs, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, Colorado 80202-2117, and refer to Job Order Number CO CO4644354. NO PHONE CALLS PLEASE. Must have proof of legal authority to work in the US.

Sr. Software Engineer sought by software development company in Denver, CO, to work in Denver & other unanticipated job sites in the U.S., to, at a senior level, design & develop client/server, multi-tier, & web-based software applications that incorporate Tuxedo middleware & ORACLE relational database management systems & are platform independent. Engage in writing requirements documents & in project scheduling. Analyze requirements, create designs & design documentation, code, test, & debug the software applications. Use the Rational Rose object-oriented analysis & design methodology, C, C++, & JAVA programming languages, embedded SOL, & the PERL scripting language in the design & development process. Provide user training & support as necessary. Provide mentoring to other software developers. Requires Bachelor's or equivalent (2 yrs of software development experience), or foreign degree equivalent. 4 yrs experience designing & developing client/server software applications using embedded SQL & programming language C. Working knowledge of PERL scripting language. $82,560/yr; M-F; 8am-5pm. (2 openings) Respond by resume to James Shimada, CO Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202, & refer to Job Order No. CO4644250.

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GAINERS

PERCENT	
Spyglass Inc. (H)	65.7
Iomega	33.3
Maxtor Corp.	31.3
TenFold Corp. (H)	27.4
Intuit (H)	27.4
Globalstar Telecom. Ltd. (H)	24.1
Qualcomm (H)	22.7
Sungard Data Systems	20.8

DOLLAR	
Qualcomm (H)	26.89
Uniphase (H)	17.72
Spyglass Inc. (H)	17.50
Intuit (H)	15.88
Hnc Software (H)	13.38
Red Hat Inc.	12.88
TenFold Corp. (H)	9.88
Ariba Inc. (H)	8.25

LOSERS

PERCENT	
BMC Software Inc. (H)	-44.2
Network Computing Dev (H)	-42.4
The Baan Co. N.V.	-39.0
Tibco Software Inc.	-32.9
Lucent Technologies	-31.9
Compuware Corp.	-31.0
Parametric Technology Corp.	-28.8
Antec	-28.1

DOLLAR	
Tibco Software Inc.	-58.81
BMC Software Inc. (H)	-34.00
Veritas Software Corp. (H)	-27.88
Yahoo Inc. (H)	-27.00
Sapient Corp. (H)	-25.19
Lucent Technologies	-24.81
Amazon.com	-21.31
Checkfree (H)	-21.28

Corporate Family Benefits Storage Vendor

Fellow Noorda start-ups boost MTI's prospects

BY DAVID ORENSTEIN
AND CHRISTINE MCGEEVER

INDUSTRY ALMANAC

STORAGE VENDOR MTI Technology Corp. [Nasdaq:MTIC] in Anaheim, Calif., can tell you how nice it is to have a nurturing family. The small company, one of a nest of mutually supportive start-ups created by former Novell Inc. chief Ray Noorda, has seen its stock price skyrocket from a one-time low of $3 per share to almost $35 last Friday.

Although its billion-dollar market cap is still tiny compared with competitor EMC Corp.'s [NYSE:EMC] $111.6 billion value, the company is profitable and has had positive earnings surprises for the past four quarters, according to Boston-based First Call Corp.

MTI's products have demonstrated the high performance, fast transaction response and high reliability required by Internet-based companies, said Brion Tanous, an analyst at First Security Van Kasper in Los Angeles. As a result, Tanous said, MTI is attracting successful Internet-based customers, such as online ad services vendor Doubleclick Inc. "Doubleclick is growing by leaps and bounds, and MTI is providing their storage," he said.

MTI is also getting business from another Noorda start-up, an application service provider business called Center 7.

As the vendor of storage for Center 7, MTI will benefit from the application service provider marketplace, whose hunger for storage is driven by its business of hosting applications and data for user companies that don't want to manage information technology themselves, according to Lisa Rudley, an analyst at New York-based Sidoti & Co.

"We believe that Center 7 will become one of MTI's biggest customers as it continues to grow its [application service provider] clients," wrote Rudley in her November report.

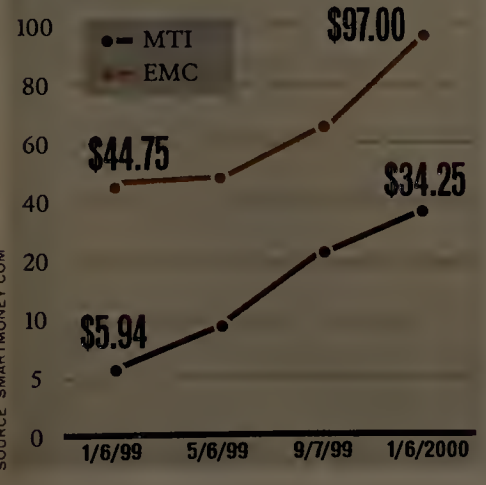
Aside from the profitability of its high-end RAID systems, MTI may also benefit from its 20% equity stake in another Noorda-led company, Linux vendor Caldera Systems Inc., analysts said.

Tanous said MTI's stake in Caldera, which is expected to soon enter the optimistic market for Linux stocks, "is the icing on the cake."

If Caldera goes public and its price goes up, MTI's value will rise by anywhere from $7 to $21 per share, Rudley wrote in her report. The firm will become richer as Caldera does, she said.

Hot Market for Storage

MTI and EMC are having great years, but MTI's value is soaring on the strength of its products and investments.



SOURCE SMARTMONEY.COM

EXCH	52-WEEK HIGH	52-WEEK LOW	RANGE	JAN. 7 2 PM	WK NET CHANGE	WK PCT CHANGE
SOFTWARE OFF -6.2%						
ASWX	105.00	12.50	Active Software (H)	68.50	-23.50	-25.5
ADBE	79.00	18.87	Adobe Systems Inc.	63.38	-3.75	-5.6
AR8A	211.00	30.50	Ariba Inc. (H)	168.50	8.25	5.1
AZPN	30.93	8.12	Aspen Technology Inc. (H)	29.75	-0.25	-0.8
AD5K	49.43	17.00	Autodesk Inc.	31.38	-0.81	-2.5
AVID	34.25	9.43	Avid Technology	12.25	1.94	18.8
BMCS	86.62	30.00	BMC Software Inc. (H)	43.00	-34.00	-44.2
BOBJ	153.50	16.37	Businesss Objects S.A. (H)	118.94	-18.19	-13.3
CDN	34.06	9.12	Cadence Design Systems	22.13	0.25	1.1
C8T5Y	38.25	8.56	CBT Group Plc.	31.25	0.97	3.2
CHKP	223.50	23.00	Checkpoint Software Tech. Ltd.	185.75	2.69	1.5
CTX5	130.50	26.50	Citrix Systems Inc. (H)	107.44	-14.25	-11.7
COGN	48.75	19.37	Cognos Inc. (H)	46.56	-0.81	-1.7
CA	72.00	32.12	Computer Associates Int'l Inc. (H)	59.50	-8.69	-12.7
CPWR	40.00	16.37	Compuware Corp.	26.88	-12.06	-31.0
OCTM	63.50	9.37	Documentum (H)	51.13	-8.25	-13.9
EFII	64.87	32.00	Electronics For Imaging	49.25	-8.75	-15.1
HNC5	130.00	13.75	Hnc Software (H)	94.13	13.38	16.6
HYSL	44.00	9.87	Hyperion Software (H)	33.75	0.56	1.7
IDXC	46.62	12.43	IDX Systems	29.06	-0.94	-3.1
INFA	109.37	19.00	Informatica Corp.	95.13	-1.75	-1.8
IFMX	14.00	6.03	Informix Software Inc.	9.63	-1.44	-13.0
INTU	79.93	22.50	Intuit (H)	73.75	15.88	27.4
JKHY	56.50	26.43	Jack Henry Associates	49.75	-4.81	-8.8
JDEC	33.25	10.87	J.D. Edwards & Co.	31.50	2.50	8.6
LGTO	82.50	15.06	Legato Systems Inc. (H)	61.38	-19.63	-24.2
MACR	88.68	26.37	Macromedia Inc.	77.63	-1.50	-1.9
MANU	35.87	5.25	Manugistics Group Inc.	31.06	-0.63	-2.0
MENT	15.06	7.75	Mentor Graphics	11.88	-0.38	-3.1
MSFT	119.93	68.00	Microsoft Corp. (H)	108.84	-9.03	-7.7
NETA	60.00	10.06	Network Associates	24.31	1.38	6.0
GMH	104.00	41.25	Network General (H)	96.50	2.56	2.7
NDVL	42.43	16.06	Novell Inc. (H)	34.88	2.94	9.2
ORCL	125.18	21.00	Oracle Corp. (H)	100.13	-9.19	-8.4
PMTC	35.93	11.68	Parametric Technology Corp.	19.31	-7.81	-28.8
PSFT	26.37	11.50	PeopleSoft Inc.	24.94	1.56	6.7
PIXR	50.62	33.00	Pixar	34.88	-5.13	-12.8
RATL	53.68	21.87	Rational Software Corp.	46.06	-4.81	-9.5
RHAT	302.62	40.00	Red Hat Inc.	244.88	12.88	5.5
QSFT	120.00	20.50	Quest Software	84.00	-16.75	-16.6
SAP	55.75	23.75	SAP AG	55.75	5.88	11.8
SCUR	29.00	2.25	Secure Computing Corp.	11.56	0.88	8.2
SE	46.43	17.93	Sterling Commerce Inc.	31.63	-3.00	-8.7
SSW	32.00	18.12	Sterling Software Inc. (H)	29.19	-0.63	-2.1
SDRC	23.43	8.81	Structural Dynamics Research	11.63	0.19	1.6
SYBS	19.81	5.31	Sybase Inc.	17.00	1.06	6.7
SYMC	69.31	12.50	Symantec Corp.	49.75	-17.13	-25.6
SNPS	75.62	37.12	Synopsis	58.00	-5.81	-9.1
SCTC	19.50	7.81	Systems & Computer Technology	14.88	-2.94	-16.5
BAANF	17.81	6.87	The Baan Co. N.V.	8.69	-5.56	-39.0
TIBX	195.00	19.75	Tibco Software Inc.	120.19	-58.81	-32.9
TSAI	50.87	20.25	Trans. Sys. Arch.	23.75	-3.38	-12.4
VRTS	147.87	20.37	Veritas Software Corp. (H)	119.25	-27.88	-18.9
WIND	45.00	11.25	Wind River Systems Inc.	34.00	-4.75	-12.3
TELECOMMUNICATIONS CARRIERS OFF -3.8%						
AT	91.81	56.31	Alltel Corp.	74.94	-5.19	-6.5
ANDW	22.87	11.00	Andrew Corp.	19.06	0.56	3.0
T	64.12	41.50	AT&T	48.56	-4.75	-8.9
BCE	98.31	37.31	BCE Inc. (H)	82.31	-6.00	-6.8
BEL	69.50	50.62	Bell Atlantic	58.63	-5.25	-8.2
BLS	51.37	39.75	Bell South	45.06	-2.56	-5.4
BRW	37.87	16.31	Cincinnati Bell Inc. (H)	36.69	0.38	1.0
CMC5K	57.68	29.00	Comcast (H)	45.25	-9.50	-17.4
CQ	37.06	15.37	Comsat Corp.	19.50	1.50	8.3
COX	52.00	32.00	Cox Communications Inc.	46.13	-4.25	-8.4
GSTRF	53.75	12.62	Globalstar Telecom. Ltd. (H)	34.75	6.75	24.1
GTE	78.50	57.00	GTE Corp.	68.44	-4.69	-6.4
NXTL	117.37	26.00	Nextel Communications	95.88	-9.94	-9.4
SPOT	70.75	26.37	Panamsat (H)	64.56	5.69	9.7
QCOM	200.00	7.12	Qualcomm (H)	144.50	26.69	22.7
SBC	59.93	43.12	SBC Communications (L)	44.00	-6.88	-13.5
FON	75.93	36.87	Sprint Corp.	64.00	-5.88	-8.4
TDS	137.00	45.62	Telephone and Data Systems	106.63	-15.25	-12.5
USW	73.00	51.50	US West	64.94	-7.56	-10.4
VIA	60.56	35.31	Viacom (H)	51.75	-6.06	-10.5
WCII	81.50	28.50	Winstar Communications Inc.	68.38	-8.19	-10.7
WCOM	64.56	44.12	MCI Worldcom Inc. (H)	47.81	-4.77	-9.1
SERVICES OFF -2.4%						
ACXM	30.62	14.56	Acxiom Corp.	25.50	2.44	10.6
AC5	53.00	31.75	Affiliated Computer Servs	42.88	3.81	9.8
AMSY	39.75	19.75	American Mgt. Systems	30.13	0.06	0.2
AUD	54.81	20.87	Automatic Data Processing (H)	53.38	1.13	2.2
BSY5	65.50	41.37	Bisys Group Inc. (H)	63.00	3.06	5.1
CATP	32.25	10.62	Cambridge Technology Ptnrs	22.94	-1.88	-7.6
CEN	40.50	16.62	Ceridian	20.81	-1.63	-7.2
CBR	29.81	13.75	Ciber Inc.	24.63	-4.00	-14.0
CDO	43.00	10.75	Comdisco	31.25	-7.56	-19.5
CHRZ	30.00	9.25	Computer Horizons Corp.	13.94	-1.75	-11.2
CSC	94.62	52.37	Computer Sciences (H)	86.88	-2.13	-2.4
DST	76.43	50.93	Dst Systems Inc. (H)	70.13	-1.19	-1.7
EDS	70.00	44.12	Electronic Data Systems	59.00	-8.44	-12.5
FDC	51.50	31.62	First Data Group	49.75	-0.25	-0.5
FISV	40.75	24.12	Fiserv	37.00	-2.75	-6.9
IT	25.75	9.56	Gartner Group	14.88	1.31	9.7
KEA	28.50	6.34	Keane (L)	27.94	-4.19	-13.0
NDC	55.25	21.75	National Data	32.44	-2.94	-8.3
PAYX	44.87	23.56	Paychex Inc.	40.25	1.69	4.0
PER	85.75	15.31	Perot Systems Corp.	18.75	-1.50	-7.4
REGI	9.00	2.68	Renaissance Worldwide (H)	7.44	0.56	8.2
REY	25.31	17.31	Reynolds & Reynolds	21.00	-1.44	-6.4
SFE	191.00	29.62	Safegard Scientifics (H)	162.50	-8.38	-4.9
SAPE	151.18	19.00	Sapient Corp. (H)	100.19	-25.19	-20.1
SMS	73.50	35.50	Shared Medical Systems	47.31	-3.38	-6.7
SDS	41.93	16.87	Sungard Data Systems	27.25	4.69	20.8
SYNT	19.62	7.00	Syntel Inc. (H)	17.50	-1.00	-5.4
TECO	44.68	14.50	Tech Data	24.13	0.00	0.0
TENF	45.88	17.00	TenFold Corp. (H)	45.88	9.88	27.4
TSS	26.25	14.12	Total System Services Inc.	16.00	0.75	4.9
TSAI	50.87	20.25	Transaction Sys. Architects	23.75	-3.38	-12.4
NETWORK OFF -8.0%						
COMS	53.75	20.00	3Com Corp	44.38	1.06	-2.3
ADCT	75.75	34.37	ADC Telecommunications Inc. (H)	65.44	8.06	-11.0
ANTC	60.25	18.62	Antec	30.19	-11.81	-28.1
BNYN	23.87	6.25	Banyan Systems Inc. (H)	17.13	-5.56	-24.5
CS	29.31	7.18	Cabletron Systems	23.75	3.44	12.6
CNEBF	9.75	2.87	Call-Net Enterprises (L)	3.44	0.31	10.0
CSCO	110.25	44.93	Cisco Systems Inc. (H)	103.38	-0.31	-0.3
ECIL	45.00	23.75	ECI Telecom	35.88	3.38	10.4
ENTU	70.62	16.87	Entrust Technologies Inc.	49.19	-2.69	-5.2
HRS	40.62	18.25	Harris Corp.	24.94	-1.75	-6.6
GMH	104.00	41.25	Hughes Electronics/GM (H)	96.50	2.56	2.7
ERICY	68.59	20.50	LM Ericsson (H)	59.63	-0.38	-0.6
JNPR	384.37	90.12	Juniper Networks Inc. (H)	368.88	-12.00	-3.6
LU	84.18	47.00	Lucent Technologies	53.06	24.81	31.9
MADGF	10.25	1.43	Madge Networks	7.19	-0.69	-8.7
NCDI	9.00	3.87	Network Computing Dev (H)	4.75	3.50	42.4
NWK	14.81	7.31	Network Equipment Tech.	11.50	0.63	5.7
NN	39.87	14.00	Newbridge Networks	22.25	1.00	4.7
NOK	196.50	62.31	Nokia Corp. (H)	167.00	6.00	3.5
NT	110.06	25.18	Northern Telecom Ltd. (H)	91.63	5.94	6.1
PAIR	18.56	7.93	Pairgain Technologies Inc.	12.13	3.88	24.2
PCTL	11.00	3.25	Picturetel	4.59	0.34	8.1
SFA	66.50	22.50	Scientific Atlanta	51.00	4.81	8.6
TLAB	77.25	35.87	Tellabs Inc.	64.44	2.81	4.2
USW	73.00	51.50	US West	64.94	-7.56	-10.4
VRLK	5.43	1.81	Verilink	4.13	0.50	10.8
WSTL	13.00	3.81	Westell Technology Inc.	9.75	1.44	12.8
SEMICONDUCTORS, CHIPS & EQUIPMENT OFF -2.7%						
ADPT	57.75	18.75	Adaptec	56.88	2.81	5.2
AMD	33.00	14.56	Advanced Micro Devices	32.00	2.94	10.1
ALTR	68.56	23.93	Altera	51.25	1.31	2.5
ADI	94.50	24.37	Analog Devices (H)	85.81	4.88	6.0
AMAT	129.00	48.43	Applied Materials (H)	113.31	-7.34	-6.1
ASML	117.00	36.37	ASM Lithography Holding (H)	99.50	-11.75	-10.6
FCS	34.12	18.50	Fairchild Semiconductor Corp.	26.19	-0.69	-2.6
HRS	40.62	18.25	Harris Corp.	24.94	-1.75	-6.6
INTC	89.50	50.12	Intel Corp.	80.06	-3.31	-4.0
KLAC	113.12	42.37	Kla Instruments (H)	101.63	-1.69	-1.6
LLTC	83.18	41.75	Linear Technology	79.25	6.41	8.8
LSI	71.37	17.87	LSI Logic	60.19	-4.81	-7.4
MXIM	50.00	19.93	Maxim Integrated Products (H)	49.19	2.00	4.2
MU	85.00	34.25	Micron Technology	70.19	-3.81	-5.2
MOT	153.62	63.31	Motorola (H)	124.88	-18.31	-12.8
NSM	51.87	8.87	National Semiconductor	42.81	-2.56	-5.6
STM	160.93	40.25	SGS-Thomson Microelectronics (H)	128.38	-20.13	-13.6
SLR	98.00	37.25	Solectron Corp.	88.44	-2.63	-2.9
TER	66.00	21.81	Teradyne (H)	58.06	-1.69	-2.9
TXN	111.50	43.00	Texas Instruments	92.69	-15.19	-14.1
JDSU	189.50	14.81	Uniphase (H)	167.44	17.72	11.8
VTSS	58.00	20.37	Vitesse Semiconductor Corp. (H)	46.25	-5.19	-10.1
XLNX	48.56	15.31	Xilinx	44.63	0.34	0.8
COMPUTER SYSTEMS OFF -6.2%						
AAPL	118.00	32.00	Apple Computer Inc.	97.25	-5.81	-5.6
ASPX	15.25	3.87	Auspex Systems	7.94	-0.56	-6.6
BEOS	39.56	3.28	Be Inc.	22.56	-2.06	-8.4
CPQ	51.25	18.00	Compaq	28.31	0.06	0.2
DELL	55.00	31.37	Dell Computer Corp.	45.94	-7.38	-13.8
GTW	84.00	26.87	Gateway 2000 Inc.	61.25	-9.94	-14.0
HWP	118.87	63.37	Hewlett-Packard Co. (H)	102.69	-8.75	-7.9
HIT	164.50	59.93	Hitachi Ltd. (H)	144.25	4.75	3.4
IBM	139.18	80.87	IBM	112.50	2.81	2.6
MUEI	19.37	9.00	Micron	10.69	-0.63	-5.5
MOT	153.62	63.31	Motorola (H)	124.88	-18.31	-12.8
NATI	39.50	17.18	National Instruments Corp. (H)	34.50	-1.06	-3.0
NCR	55.75	26.68	NCR	36.06	-1.63	-4.3
NIPNY	125.00	43.62	NEC	110.88	4.13	3.9
PRCM	38.25	3.43	Procom Tech Inc.	19.63	-4.25	-17.8
SGI	20.87	6.87	Silicon Graphics Inc.	9.25	-0.81	-8.1
SNE	295.87	65.50	Sony (H)	225.50	-10.56	-4.5
SUNW	83.03	21.87	Sun Microsystems	70.19	-5.69	-7.5
TRCD	7.25	1.53	Tricord Systems	4.56	-0.41	-8.2
UIS	49.68	20.93	Unisys	28.94	-2.00	-6.5
INTERNET OFF -6.1%						
AMZN	113.00	41.00	Amazon.com	68.63	-21.31	-23.7
AOL	96.00	31.25	America Online	72.06	-10.63	-12.8
ATHM	99.00	33.12	@home Corp.	38.88	-5.13	-11.6
BAMB	27.75	8.93	Bamboo.com	20.06	2.31	13.0
CKFR	107.50	20.62	Checkfree (H)	76.59	-21.28	-21.7
CYCH	24.00	6.68	Cybercash Inc.	8.56	-2.56	-23.0
EBAY	234.00	55.37	eBay Inc.	133.63	-8.88	6.2
ETYS	86.00	22.56	eToys Inc. (L)	22.56	-8.44	-27.2
EGRP	72.25	13.50	ETrade Group Inc.	26.56	-0.88	-3.2
LCOS	93.62	28.56	Lycos Inc.	68.38	-17.00	-19.9
OMKT	49.84	11.18	Open Market Inc.	36.38	-4.44	-10.9
OTEX	42.50	9.50	Open Text Corp.	19.25	1.13	6.2
PCLN	165.00	45.50	Priceline.com Inc. (L)	57.25	2.19	4.0
PRGY	50.62	14.00	Prodigy Communications	22.38	0.25	1.1
PSIX	73.75	22.00	PSINet Inc.	59.13	-5.63	-8.7
RSAS	80.00	14.25	Security Dynamics (H)	60.13	4.19	6.5
SPYG	54.00	8.62	Spyglass Inc. (H)	44.13	17.50	65.7
WINK	65.75	21.75	Wink Communications Inc. (H)	45.13	-14.50	-24.3
YHOO	500.12	110.00	Yahoo Inc. (H)	385.00	-27.00	-6.6
STORAGE & PERIPHERALS UP 3.4%						
ADPT	57.75	18.75	Adaptec Inc.	56.88	2.81	5.2
APCC	29.37	13.12	American Power Conversion	25.00	3.63	12.7
CANNY	40.93	19.25	Canon Inc. (H)	38.50	2.63	6.7
OBO	39.87	19.68	Diebold Inc.	25.00	2.13	9.3
EK	80.37	56.62	Eastman Kodak Co.	62.38	1.13	1.8
EMC	117.00	17.25	EMC (H)	103.06	3.25	3.3
IOM	10.18	2.87	Iomega	4.50	1.13	33.3
MXTR	21.25	4.25	Maxtor Corp.	8.13	1.94	31.3
NTAP	91.87	19.06	Network Appliance Inc. (H)	76.00	-13.38	-15.0
LXK	104.00	42.06	Lexmark International Group Inc.	88.44	6.50	7.9
SEG	48.81	25.12	Seagate Technology (H)	40.25	-7.00	-14.8
STK	41.62	14.25	Storage Technology	16.63	0.50	2.9
TEK	42.81	17.58	Tektronix (H)	37.06	0.25	0.7
XRX	63.93	19.00	Xerox	23.94	2.13	9.7

KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

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Baan's Woes

exit Baan since mid-1998. Her surprise departure and a projected fourth-quarter loss of up to $250 million leave the company in "probably as close to an impossible situation as you can find," said Rod Johnson, an analyst at AMR Research Inc. in Boston.

The latest restructuring at Baan — which has now lost money for six quarters — includes a shift in development priorities from ERP to e-commerce. Katrina Roche, chief marketing officer at Baan, said planned ERP enhancements are being dropped to speed development of Web-based applications, such as a business-to-business collaboration package.

That change didn't raise any immediate red flags for users, including Frank Hannig, CIO at Altera Corp. in San Jose. Hannig said the semiconductor maker is more interested in testing Baan's online sales software than in its adding new functionality to its ERP system.

But a longer-term concern is how good Baan's ERP software will be "in two or three years, when we're ready to do the next major upgrade," Hannig added. "It's unfortunate to see them continue to lose money."

Even worse is the brain drain at Baan, said Keith Bearden, CIO at dental equipment maker A-dec Inc. in Newberg, Ore. "They're not just bleeding money," he said. "They're bleeding people."

Coleman's departure hurts, and Baan has lost a lot of sales and support workers, said Bearden. The salesman who worked with A-dec quit last month and was temporarily replaced by someone in faraway Dallas, he noted.

SAP AG and Baan's other ERP rivals also are having a tough time selling software and keeping key employees. But Baan's U.S. business "has really been destroyed, and they've been unable to rebuild it," said Johnson.

Baan's troubles surfaced in 1998 after an acquisition spree left it with a group of incompatible applications and an unwieldy organization. Questionable financial dealings by cofounders Jan and Paul Baan also hurt, as did flattening demand for ERP software as the window for fixing Y2K problems closed.

Coleman, who became president in late 1998 and was named CEO last May, got credit for uniting Baan's operating units and prodding the company to deliver on promises to tie together its applications.

Roche said Coleman "absolutely was not pushed" out. Baan's fourth-quarter software license revenue more than doubled from a tiny $25.6 million in the last three months of 1998, Roche added, but she wouldn't predict when Baan would be profitable again.

Last week's events call Baan's future as an independent company into question, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif. Especially for prospective new buyers, there's "too much chaos at the top of Baan to make it a safe bet," he said. ◗

PeopleSoft Forecasts Small Quarterly Profit

BY CRAIG STEDMAN

While Baan Co. was releasing a barrage of more bad news, rival PeopleSoft Inc. — itself no stranger to struggles — last week said it expects to report a small operating profit for the fourth quarter of last year.

Pleasanton, Calif.-based PeopleSoft predicted that its operating profit will come in between $4.8 million and $9.6 million. That estimate includes its own application business and The Vantive Corp., a Santa Clara, Calif., vendor of customer relationship management software that PeopleSoft acquired Dec. 31.

Outside earnings estimates had targeted the low end of that earnings range, according to First Call Corp., a financial research firm in New York.

Even so, PeopleSoft remains "marginally profitable" and still hasn't proved that it's on the road to recovery after hitting the wall on software sales early last year, said Bert Hochfeld, an analyst at Josephthal & Co. in New York. Combined fourth-quarter software sales for PeopleSoft/Vantive may be down more than 50%, compared with the last three months of 1998, Hochfeld said.

"I still haven't seen a consistent e-business strategy that will produce revenue growth [for PeopleSoft]," he added.

PeopleSoft confirmed that year-to-year sales continued to decline in the fourth quarter, but it said license sales should increase at least 35% from their third-quarter levels.

The company could end up with a net loss for the quarter because of charges of $50 million to $70 million related to the Vantive acquisition. However, PeopleSoft said those charges will be partially offset by gains of $45 million to $50 million from the sale of some equity investments. ◗

Baan Limits Off-hours Help

Another change at Baan may impact some customers who need support after the normal business day ends.

Baan last week confirmed that its telephone support workers have been told to stop providing off-hours assistance to users who don't have 24-hour support contracts.

Baan had been taking off-hours calls and billing users for the time and material needed to address problems as "an extra effort for customers," a spokesman said. But an increase in calls has led the company "to adhere more closely to written contracts," he added.

A-dec ran up against the more stringent approach in late December when it tried to get off-hours help with a software patch that was being applied to its Baan-based ERP system.

CIO Keith Bearden said A-dec will have to change the way it works on the ERP system because 24-hour support is too expensive. It would cost about $320,000 per year, a big jump from the $180,000 A-dec now spends to receive support from 7 a.m. to 5 p.m.

He said A-dec had to pay only about $20,000 per year in time-and-material costs for off-hours help. – *Craig Stedman*

Continued from page 1

Wireless Web

stores Amazon.com Inc. and Barnesandnoble.com LLC are among the first retailers to let handheld users order products.

While many electronic retailers are targeting the Palm VII platform, Harris Bankcorp Inc. in Chicago has started trials of wireless access to bank accounts from cellular phones. Users are able to check account balances, transfer funds between accounts and have financial alerts sent to them by e-mail or voice mail. "A lot of people are more comfortable with a phone than a PC," said Charlie Piermarini, executive vice president of electronic channels at Harris.

Bill Malloy, president and CEO of Internet grocery store Peapod Inc. in Skokie, Ill., said his company is developing wireless shopping capabilities for the Palm VII and later will offer access via cell phones.

Established Web sites need to prepare for the Wireless Application Protocol (WAP), the emerging standard for wireless access from a cellular phone, said Elliott Hamilton, an analyst at The Strategis Group Inc. in Washington. "For any company that has a consumer-based Web site [where] consumers get any kind of information, it definitely makes sense to make this Web site WAP-friendly," he said.

Consumer acceptance of the wireless Web is expected to precede widespread corporate adoption. But it may already be a valuable way to give employees access to time-sensitive data. Gerry Purdy, president and CEO of Mobile Insights Inc. in Mountain View, Calif., said he believes time-sensitive applications such as inventory-checking will precede widespread rollout of wireless-enabled public Web sites.

Technology exists now that can automatically convert HTML pages into information that can be viewed from a cellular phone. But most experts agree that this isn't a promising approach. Wireless users expect a different experience: no scrolling, easy click-through and a high degree of personalization.

Creating and maintaining a wireless Web site will be a separate part of Web maintenance, said Dulaney.

Vendors are rushing tools to market that will help prepare Web sites for wireless access. AvantGo Inc. in San Mateo, Calif., uses HTML for input but creates output especially formatted for the Palm VII, Windows CE devices and WAP phones. Phone.com Inc. in Redwood City, Calif., offers a WAP server and browser. Both vendors are also quickly expanding their own wireless portals. ◗

Wireless Data on the Rise

Wireless data is already strong in Europe and is growing here:

- The number of wireless subscribers worldwide will grow from a projected 469 million in 1999 to 1.26 billion in 2005.
- About 50 million people nationwide are mobile, spending 20% or more of their time away from their desks.
- The number of corporate wireless data users will grow from 784,000 in 1999 to nearly 9 million in 2003.

SOURCE: THE YANKEE GROUP, BOSTON; CAHNERS IN-STAT GROUP, SCOTTSDALE, ARIZ

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FRANK HAYES/FRANKLY SPEAKING

Feeling cheated?

ARE YOU FEELING CHEATED by the Y2K bug yet? Don't worry — if you're an information technology professional, you will. After all that Y2K work, all the late nights and bleary eyes, the repairing and replacing and testing of things that could have broken when 1999 turned into 2000 — after all that, what you're getting at the end of the road is . . . nothing.

Though you won't read this until 10 days after the fact, I'm writing this at just past zero hour. I've watched midnight crawl its way around the globe since New Zealand. What have I got to report? Nothing, not a doggone thing — no real problems to speak of anywhere. All the places we thought would have big trouble — Russia, China, all over the Third World — are reporting, well, nothing worth reporting.

No airplanes fell out of the sky. No missiles launched themselves. A few power plants had glitches, but none that weren't spotted and fixed by sharp-eyed technicians.

Civilization didn't end. We didn't plunge into a new Dark Ages. The payoff for the biggest IT challenge in history is a lot of nothing.

OK, maybe that doesn't make you feel cheated. Maybe that makes you feel pretty good, in fact.

But by the time you read this, you've probably already heard a lot of chatter about how all this Y2K hoohah was much ado about nothing.

Some of it will be ribbing from people who know how hard you worked. Maybe they don't think it was all necessary. Maybe they figure you went overboard worrying about what might have gone wrong. But at least it's good-natured.

Some of it won't be so good-natured, though. There are going to be some hard questions from corporate executives who still don't get it. They'll figure you bet wrong. You said the Y2K bug was real, a serious threat. Now that bug turns out to have no bite — and the brass will want to know why you guessed so wrong and threw so much of your company's resources into fighting something that turned out to be a lot of nothing.

That's when you'll feel cheated. Cheated out of the credit you deserve, cheated out of the respect you've earned. Because you got it right — because IT people around the world, and the people who use IT to get the job done, did their jobs so well — nothing went wrong anywhere. And as a result, these clowns will give you credit for exactly . . . nothing.

So here's your next assignment: drilling it through those thick executive skulls that not a nickel or a minute of all that money and work to fix this mess was wasted.

We didn't gamble on a catastrophe. We didn't make the wrong bet in choosing between two possible outcomes.

We *created* this outcome.

All the no-news good news, all the electricity and water and oil that kept flowing, all the systems that didn't collapse — *that's* what we created. It cost a trillion dollars in cash and maybe twice that in lost opportunities. It took a huge amount of work. And what we've created is a nonevent — so far, at least.

No, it's not over yet. But we've turned zero hour into a lot of Y2K nothing. No fireworks, no explosions, no big deal. And we're going to keep cranking out Y2K nothing, day after day.

So when the know-nothings try telling you it wasn't necessary, it was all a big waste of time and money, don't feel cheated by Y2K.

We're the ones who cheated the bug. ◗

IT didn't lose a bet. IT created the Y2K nonevent.



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SHARK TANK

LET'S PUSH-BROOM through the Y2K confetti and look at the stomped paper cups beneath.

THIS ONE SHOP said anybody who came to the office would get a bonus, plus two floating holidays. Get this: Lots of IT folks who spent the year breaking their backs on Y2K were told to stay home *but to be available just in case*. Meanwhile, business poo-bahs decided *their* presence was vital. Guess who got the bonus and floaters?

SPEAKING OF MORALE, how about the insurance company that ditched its mainframe and exiled the IT department to a mandatory virtual-office setup before the rollover? If programmers did come to the main office to fix something, a pilot fish says, "we had to hunt for a place to perch our laptops and dial in."

OH, AND THIS bank analyst installed an evaluation copy of Cold Fusion (Allaire's Web application server) before the rollover. Fired it up last week. Says he got a message reminding him there were 36,403 days left in his evaluation period. Sharky called Allaire. Three times. No callback. Gonna be a long millennium without a sense of humor, Allaire.

ANOTHER TANKSTER gets a regular NetWare update in e-mail. Workarounds, patches, etc. Usually a couple items, maybe 2K bytes. Last week's e-mail announced "3,629 new updates on 2Jan100" and was 377K bytes. "*Bad* Novell," the pilot fish scolded. Can't blame him, but at least Novell returned calls. 'Fessed up to a bad script command. Said few users were affected.

THAT BARELY leaves space for the New York branch of a **European bank**, whose managers went out for a swank New Year's Eve dinner -- and brought back sacks of White Castle burgers for the data-center grunts. Or the **put-upon school kids** who lunched on peanut butter and jelly sandwiches, the *Chicago Sun-Times* said, because the schools were scared of food spoilage. Or the **university jackass** ("looking to make a career out of Y2K, I guess," a pilot fish shrugs) who insists the swamped help desk still test all *new* PCs for compliance. Or the **$10 million eBay bid** for *www.year2000.com*, Peter de Jager's Web address, that turned out to be a fake. (De Jager should've thrown in a kidney to sweeten the deal.)

Mmm, vital organs. Toss me some chum, chum: **sharky@computerworld.com**. For a daily transplant, hit *computerworld.com/sharky*. Published dirt earns a nifty shirt.

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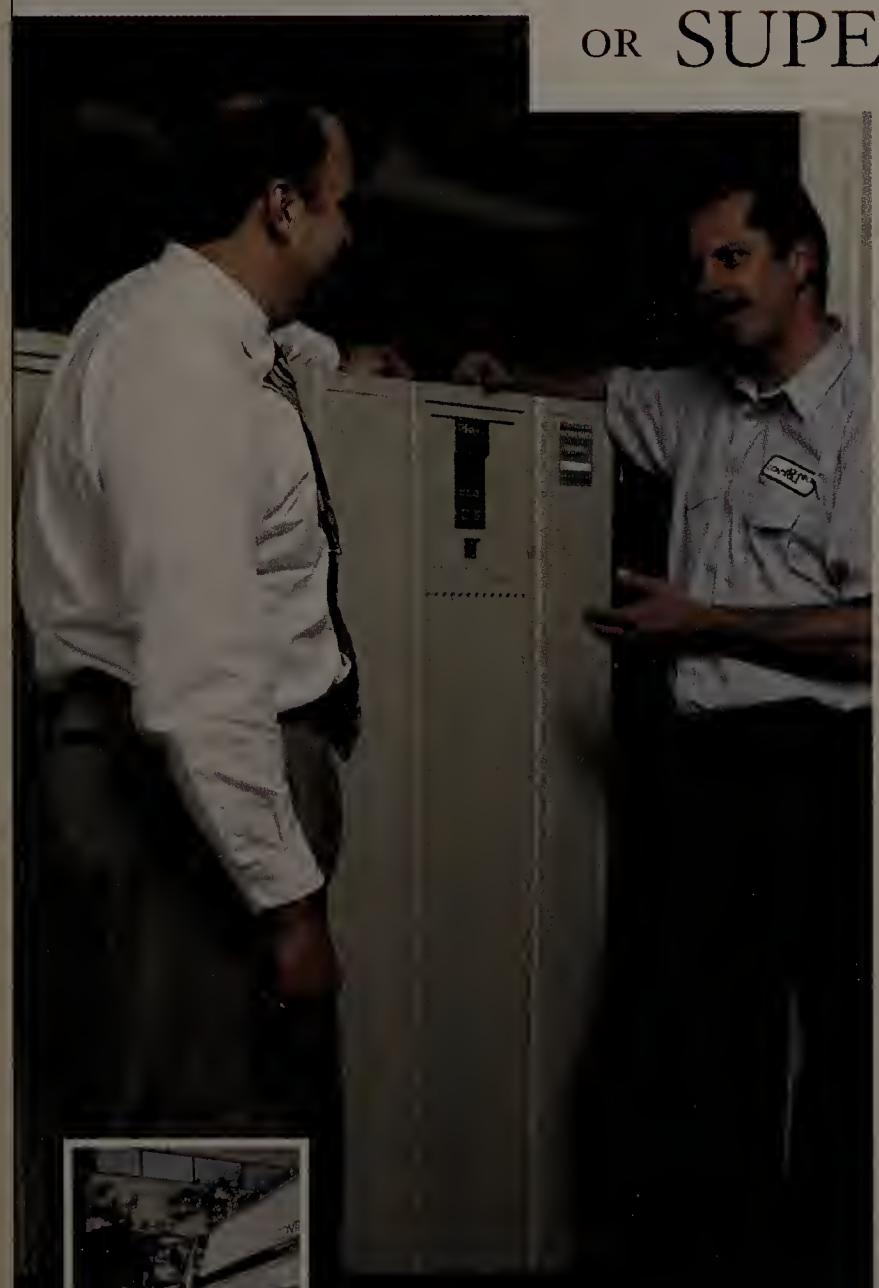


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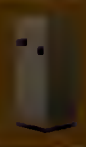
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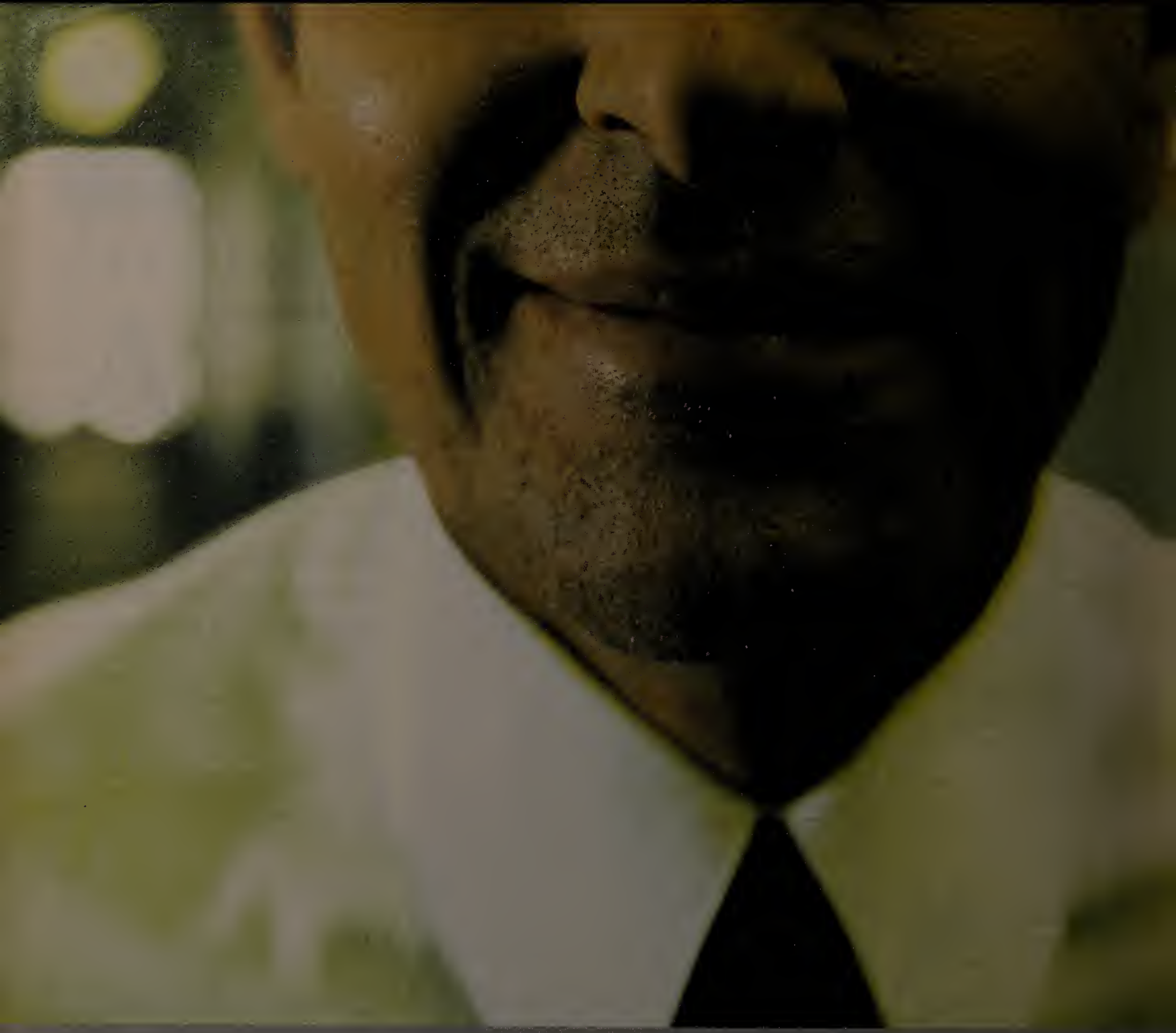
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